Amateur Radio

Volume 77 Number 11
November 2009

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TECHNICAL

COLUMNS

Our cover this month

Icom's IC-7600 HF – 6 m all mode transceiver. Outstanding!
Read the review by VK3BR and VK3OM on page 22. Photo VK3BR

Contributions to Amateur Radio

Amateur Radio is a forum for WIA members' amateur radio experiments, experiences opinions and news. Manuscripts with drawings and/or photos are always welcome and will be considered for publication. Articles on disc or email are especially welcome. The WIA cannot be responsible for loss or damage to any material. A pamphlet, 'How to write for Amateur Radio' is available from the National Office on receipt of a stamped self-addressed envelope.

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The opinions expressed in this publication do not necessarily reflect the official view of the WIA and the WIA cannot be held responsible for incorrect information published.

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A radiocommunication service for the purpose of self-training, intercommunication and technical investigation carried out by amateurs; that is, by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

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Editorial

Peter Freeman VK3PF

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I occasionally receive requests to republish and/or copy material that has appeared in *Amateur Radio* magazine. Recently, the WIA also received a request to reprint information that is available from the WIA web site.

What is the situation with these materials?

Under Australian law, copyright vests (belongs to) to the author of the material, unless the author passes the copyright to another person or body – e.g. to a publisher. The WIA's standard terms on which we deal with authors is that the author grants the WIA and *Amateur Radio* an irrevocable licence throughout the world to publish and republish the material in any WIA publication in any medium and to permit any IARU national society to publish the material in its national magazine, so long as the material is fully and clearly attributed. The author retains copyright.

With any request to republish material from *Amateur Radio*, the person requesting permission must receive two permissions: from *Amateur Radio* (from the Editor) and from the author of the material. If both are granted, it will be on the basis that when republished, due acknowledgment of the material having been published in *AR*, including the issue details, will be clearly made – this is what is called attribution.

But what about material on the WIA web site?

For items such as News announcements, it should be okay to republish the material, provided correct attribution is made.

For much of the other material on the WIA web site, such as the technical/support information, information about where to hear the news, etc., the story must be different. As this type of information is subject to periodic amendment, it can only have one 'home'. Anyone wishing to 'distribute' this material may only publish a link to the WIA web site, either from their local web site or in the local Club newsletter. This prevents outdated information being displayed.

So, if anyone wishes to republish an article from *AR*, contact me as Editor in the first instance. I can then usually pass the request on to the author.

For material that is published on the WIA website, any request can be made to the Secretary of the WIA. However, do note that much of the material will not be permitted to be republished, as it is best for everyone if we have the material in only one location. That way, it can be as up to date as possible.

Some might say "But many do not have access to the internet". I would disagree – in most areas, you only need to go to the local library and ask for assistance! If you take the URL for the material with you, a librarian will usually help you to quickly locate the material.

A little time spent in the shack

I was able to commit some time recently to listening to the radios and attempting some contacts on VHF, apart from contacts via the local repeater network.

I did manage to confuse one amateur in Canberra during our first contact since I acquired my new callsign! It was an aircraft enhancement contact on a Saturday morning, so signals were a little variable at the start of the contact.

The next task was to get the gear working again with the interface to the computer, to enable use of the WSJT modes. Watching the VK Logger, I noted that Barry VK3BJM/5 was finally on air at Mount Arden. Moving the beam towards him bought S6 noise across the entire lower segment of 144 MHz! I could see others having success in working Barry, but nothing heard by me due to the noise. I eventually gave up and moved to some other tasks.

I was up early on Sunday morning, hoping for a meteor scatter contact. Others were having success, but that broadband noise source was strongest at my optimum beam heading. Darn! I went back to just monitoring the frequency being used.

And then there was a glimmer of hope – I had a perfect decode of Barry's signal as he was completing a contact into Melbourne using JT65a. Having made contact with Barry via the logger, we spent some twenty minutes attempting a contact. Neither of us had any decodes, even with the mode's averaging function. I was hearing regular meteor pings, so I suggested to Barry that we change to FSK441. Almost immediately I received both our callsigns from Barry and started to send a report. It was now late in the morning, and the number of meteors was falling. But we did finally complete the contact, after almost an hour!

Thanks for the new grid square, Barry!

Cheers, Peter VK3PF **ar**

WIA comment

The IARU Region 3 Conference

Michael Owen VK3KI

I am writing this Comment in Christchurch, New Zealand.

I have been attending the International Amateur Radio Union (IARU) Region 3, 14th Triennial Conference on 12-16 October, hosted by the NZART. "Triennial" because the two other IARU Regional organisations meet in a three year cycle.

I was present as one of the IARU Region 3 Directors, and while I write this Comment from a WIA perspective, it was not my role to represent the WIA.

But the WIA does participate in IARU Region 3. We thought the Conference was sufficiently important that there were four WIA representatives: Secretary Geoff Atkinson, Jim Linton, Peter Young and David Wardlaw.

The only way the WIA can influence the policies of the IARU is to participate.

The way the Conference works is through working groups, two running at the same time, and with other working groups addressing special issues such as finance and perhaps special matters. Yes, that disadvantages small societies who are only represented by one person.

Then the conclusions of the working groups are accepted, rejected or changed on the last day by the whole Conference.

For the WIA, the cost of travel was very low, requiring travel only to New Zealand. Therefore the WIA was able to participate and at the same time introduce some new individuals to amateur radio's international forum.

Apart from the WIA there were nine other national member societies actually attending: ARRL from the USA, ARSI from India, CRSA from China, HARTS from Hong Kong, JARL from Japan, KARL from Korea, ORARI from Indonesia, SARTS from Singapore and NZART.

Three further societies were represented by proxy: RSGB from the United Kingdom, RAST from Thailand and VARS from Vietnam.

The peak international policy body, the IARU Administrative Council – comprising the IARU President, Vice President and Secretary, and two representatives from each of the three IARU Regional organisations – ordinarily meets annually, either just before or just after a Regional Conference.

So, a Regional Conference becomes the meeting point for those ultimately responsible for advancing the amateur interests at the ITU's World Radiocommunications Conferences (WRC), and the regional telecommunications organisations meetings in preparation for the WRC.

What did the Conference talk about?

Obviously the last WRC, what lessons could be learned from that, and the next WRC in 2012, and many other matters.

Two topics, the IARU Monitoring System, (we call it Intruder Watch but Monitoring Service (MS) is probably more appropriate), and emergency communications had been identified as the focus of the Conference, and major decisions were made on both of them.

Why is Intruder Watch important? Because without complaints about an intruder causing harmful interference, it may be claimed that there is no breach of the ITU Radio Regulations, which allow a station to be placed anywhere so long as it does not cause harmful interference to a station operating in accordance with the ITU's Radio Regulations.

A special working group was established with Peter Young VK3MV chairman and Rod Stafford W6ROD as secretary.

It was agreed that there was a need to update and modernise the IARU protocols and procedures to effectively deal with intruders causing harmful interference in the amateur radio bands.

The proposed measures adopted by the Conference included greater coordination between the IARU MS coordinators in the three IARU regions, a single website to more effectively collect data on intruders and to record action being taken on them, and to provide information to assist those submitting intruder observation reports.

The other major matter was the role of amateur radio in emergency communications. The Indonesian society (ORARI) and its amateurs and the Chinese society (CSRA) and its amateurs were highly commended on the role that they played in Indonesia and China after major natural disasters.

The Conference considered the concept of emergency centre of activity (CoA) frequencies worthwhile, and adopted 3.600, 7.110, 14.300, 18.160 and 21.360 MHz.

These have been immediately included in the IARU R3 Band Plans.

CoA are not spot frequencies but starting points plus or minus five kHz, are not the only frequencies to be used, and are not mode specific and should be considered as being 'all modes'.

Among the other matters considered were ARDF, better utilisation of all allocated amateur bands, BPL/PLT, EMC, visitor licensing including the Australian class licence, liaison between societies and their radio administrations, operating standards, various projects, together with support, for the development of amateur radio in the region.

Also considered were the New Zealand KiwiSAT satellite project, the beacon project, various matters affecting the 7 MHz band, including the footnotes to that band, future financial implications and the budget for the next triennium.

The NZART was praised for its hospitality and efficiency as the host society. The next IARU Region 3 Conference will be in Ho-Chi-Minh City, Vietnam in late 2012.

Unfortunately international conferences can turn into just talk-fests. But this was much more than that. I believe that the Conference was constructive, and the WIA's participation was justified.

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WIA News

14th IARU Region 3 Conference in Christchurch New Zealand concludes

An election was required for the five-member IARU R3 Directors, with Michael Owen VK3KI, Shizuo Endo JE1MUI, Peter Lake ZL2AZ, Gopal Madhavan VU2GMN and Joong-Guen Rhee HL1AQQ being re-elected.

IARU R3 Chairman Michael Owen VK3KI

The Directors then nominated Michael VK3KI as their chairman, which was endorsed by Conference. The Secretary, Jay Oka JA1TRC, was elected unopposed.

Michael VK3KI described the Conference as one of the most constructive and friendly he had attended. He said the credit for that goes to all who participated in the meaningful discussions resulting in productive outcomes.

All in attendance were in praise of the NZART organising committee, headed by Terry Carrell ZL3QL, who also took on the role of Conference Chairman, contributing greatly to its success. Sue Carrell and Mary Rogers ran a full program during the week for the partners of delegates and visitors.

The Conference concluded on Friday, 16 October 2009.

Electromagnetic emission calculations made easier

An online tool that has just been released can be very useful for radio amateurs needing to comply with their licence conditions in relation to electromagnetic radiation (EMR), which is now called EME which stands for electromagnetic energy.

Developed by Swinburne University together with EM Software and Systems, the online tool is ideal to calculate exclusion zones around antennas where radiation levels exceed safety standard limits. This requirement applies not only to amateur stations but other radio transmitters and mobile phones that operate between 3 kHz and 300 GHz. Safe levels of human exposure to radiation are determined by the Australian Radiation Protection and Nuclear Safety Agency (ARPNSA). The EME limit requirements for amateur stations were introduced basically on a self-assessment regime and the average home station should have no difficulty in complying with them.

The online tool, commissioned by the Australian Communications and Media Authority, has application for not only home stations, but through its exclusion zone calculator will allow people to conduct safety assessments of transmitting antennas, such as those found on boats, four wheel drive vehicles and in radio communication networks. To calculate the zone, all users need to do is enter the antenna type, transmitter power, antenna gain and frequency band into the online tool, and it will automatically calculate the safe distance around the antenna.

The online tool can be accessed at the Australian Communications and Media Authority website.

2009 JOTA/JOTI address to Scouts and Guides

Her Excellency Ms Quentin Bryce AC, Governor-General of Australia, Chief Scout and Patron of Girl Guides Australia addressed Scouts and Guides in a message broadcast at 1300 hours local time Saturday during the annual Jamboree On The Air and Jamboree On The Internet (JOTA-JOTI).

JOTA-JOTI was on the weekend of 16-18th October, and involved some 10,000 Scouts and Guides in Australia, and about 500,000 worldwide. JOTA-JOTI gives young people an opportunity to meet and learn about Scouts and Guides in other parts of the world.

JOTA-JOTI has a long tradition in Scouting and Guiding. This year was the 52nd JOTA and 13th JOTI.

Amateur Radio assists in disasters

A severe tropical storm in The Philippines and earthquakes in Indonesia have seen radio amateurs providing emergency communications and other relief and recovery assistance.

Philippines Amateur Radio Association (PARA) President, Dr Joey Panganiban DU1BP, reports that a tropical storm named "Ondoy" hit the Philippines creating a tragic calamity with amateurs swinging into action to help.

Joey DU1BP said, "*We have mobilized our amateur radio clubs for the relief operations. The frequency 7.045 MHz has been used for general announcements while 2-metres FM is used for our community operations.*"

The disaster has affected more than two million people and the death toll is officially at least 1,100.

Joey DU1BP said, "*All amateur and civic radio clubs are now on operation in Metro Manila under the guidance of the National Telecommunications Commission and PARA.*"

He said the PARA Secretariat has been designated to receive donations and is soliciting donations both in kind and cash for the victims.

Joe DU1BP further said, "*What the evacuees need is foods that are ready to eat (those without much preparation) such as canned goods, noodles, rice, bread, coffee, milk, sugar, salt and water.*" "*They also need medical attention and medications needed for coughs, colds, fever, diarrhoea and vitamins. These items will be repacked and given direct to the recipients, using community officials as contact points.*"

Meanwhile, a powerful earthquake rocked western Indonesia on Wednesday 30 September, trapping thousands under collapsed buildings and triggering landslides.

At least 75 people were killed on Sumatra Island after the Richter scale magnitude 7.6 earthquake. In a brief message just hours after that disaster from the Organisasi Amatir Radio Indonesia (ORARI), received by IARU Region 3 Disaster Communications Committee Chairman, Jim Linton VK3PC, it has been confirmed that amateurs are involved there too.

Wisnu Widjaja W1SNU/YB0AZ reports "*We are active on the field now to support the emergency communications in West and South Sumatra, Indonesia. Now, we are using 2-metres and the 40-metre band.*"

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Dip oscillator helper

Lou Destefano VK3AQZ

This dip oscillator helper can be used to assist with the measurement of RF coil inductance using a dip oscillator. A calibrated tuning capacitor is used to resonate with the coil under test using a simple jig. This jig supports, and allows, easy positioning of the dip oscillator, in relation to the coil under test. The dip oscillator frequency, in conjunction with the value of the calibrated capacitor, is then used to find the unknown inductance.

Dip Oscillator Helper

A useful instrument for the home brewer is the grid dip meter, or dip oscillator.

The dipper is used for finding the resonant frequency of tuned circuits, which are usually mounted on a PCB, or in a piece of equipment. It is also useful for finding the inductance of small RF coils when you do not have a suitable inductance meter, or bridge. Theory of operation of the dip meter can be found in the amateur literature.

I am currently building a project which involves the construction of various coils using toroid cores.

An annoying practice I have developed over the years is to quickly wind a coil and then solder a mica capacitor in parallel with the bare ends of the coil. I then attempt to measure the resonant frequency using the dip oscillator.

Those who are familiar with this method of using dip meters will know how difficult it is to actually dip a toroid type of tuned circuit. You dangle the tuned circuit in mid air and attempt to hold it somewhere in the vicinity of the dipper's coil, all the while trying with the other hand to turn the dip meter dial looking for some sort of flick.

It is at this point in time that the dial decides to stick, or the sensitivity is way off, or the dodgy solder joints you performed quickly, so as not to burn your fingers, break away. Then you find you have the wrong coil plugged in to add to your misery!

If you are testing a coil with a tuning slug, it is easier if you set the dip oscillator at a frequency somewhere in the vicinity of where you think it will be, and then tune the slug looking for the dip rather than turning the dip oscillator dial. This tends to overcome the problem of false dips that sometimes occur.

However toroids do not have a slug so this method cannot be used unless you put a variable C across it, and tune that instead. Now you need to find what the value of the C is, in order to calculate the coil inductance.

My project involved building a number of toroids, so rather than go through all of the above time and again, I decided to try and make something to make life easier.

I constructed a very simple device which has turned out to be very good.

It consists of a variable capacitor with a calibrated dial mounted on a frame which allows you to place the dip oscillator close to the coil under test. The coil is connected to the capacitor via a pair of screw terminals or crocodile clips. The dip oscillator sits on a small piece of timber at the correct height to couple with the coil under test. It can be slid closer or further away.

The circuit of this simple apparatus is shown in Figure 1.

Usage is very simple. Connect the test coil to the terminals. Spread the leads out so as to form a sort of loop. Place the dip oscillator on the timber block so as to have the dip oscillator pickup coil within, or very near, the loop formed. Turn the dip oscillator on and select a frequency you want to test the coil at. I often use 10 MHz for simplicity. Then you adjust the sensitivity pot on the dip oscillator for the correct position of the dip oscillator meter needle.

You now adjust the dial on your calibrated variable capacitor for a dip. Move the dip oscillator closer to the coil under test for a nice deep dip. Then move it further away till you get a just perceptible dip. The looser the coupling between the dip oscillator coil and the coil under test, the more accurate the measurement. If you cannot find a dip, try another dip oscillator frequency. Once you have a dip, use the scale on the calibrated capacitor, in conjunction with the dip oscillator frequency, to calculate the inductance. The formula can be found in text books, or you can use the calculators on the web.

Using this setup also makes it easy to check how broad the tuned circuit is. As you adjust the capacitor you get a feel as to how sharp it is, and hence its approximate Q.

A frequency counter can be coupled to the coil by passing a piece of wire through the toroid and connecting the frequency counter probe to it.

One advantage of this method is that the counter does not display a reading until the coil under test resonates with the capacitor at the frequency of the dip oscillator. A good coil will give quite a decent reading at resonance. Lower frequencies may require an extra turn

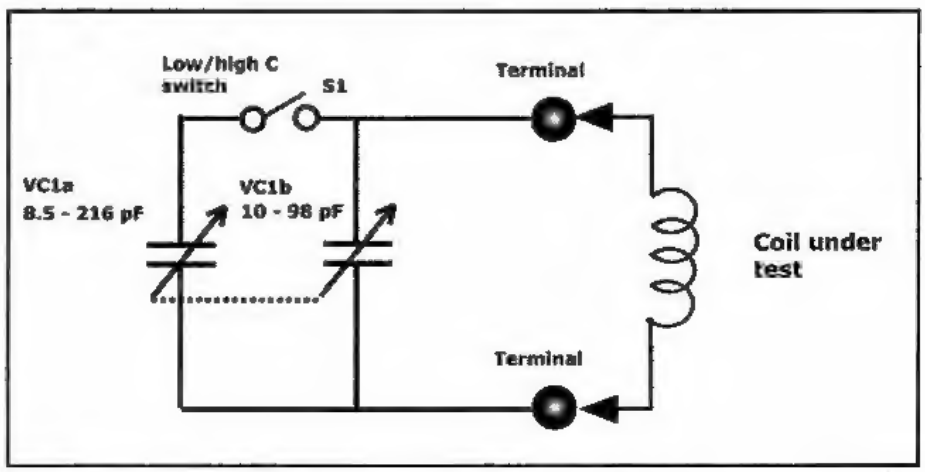

Figure 1: Circuit of the basic dip oscillator helper.

through the toroid for a stable reading. A high impedance RF diode probe across the coil reads 0.5 V dc for a 3.6 uH, T50-6 toroid, at 10 MHz. Please note that the frequency counter must have a good sensitive front end.

It is important that the capacitor has a good accurate dial. It does not matter if the calibrations are in picofarads, 0 – 100, or just plain degrees of rotation. The important thing is the accuracy of the readout and its repeatability.

Construction of the unit was kept simple and basic.

The capacitor I used is an ex AM radio air dielectric tuning capacitor with two sections. I also included a switch to connect the two sections of the tuning capacitor in parallel and increase the range

The capacitor is mounted on a piece of double sided PCB material behind a front panel made of the same material. The rest of the unit is constructed using scrap pieces of double sided PCB material and screwed to a wooden base. All of the PCB pieces are soldered together to form a sort of three sided box.

Photo 1 shows the front of the unit while Photo 2 shows the rear.

The dial is an old Jabel vernier drive unit with a 0 – 100 scale, which I had in my junk box. However I am sure most people will be able to come up with some sort of system to suit. A knob with a protractor would also work quite well.

I used a capacitance multimeter to measure the capacitance of the variable capacitor at each of the '10's' positions, and entered them into the vertical column of an Excel spreadsheet. I used Excel's graphing function to draw up a nice looking graph showing capacitance versus dial reading for both positions of the high/low capacitance switch. This graph can be seen in Photo 1 behind the unit. The coil inductance is then calculated using the formula for resonant frequency, as read on the dip oscillator dial, or an attached frequency counter. To find the inductance value, I have a spreadsheet with the formula in one of the cells. I also often use the many calculators on the web.

After I completed the unit, I felt I could share this idea through AR magazine.

However, small tuning capacitors are now a bit hard to purchase, so I decided to build a similar unit using a varicap diode. There is, however, considerably more work involved if you have to use a varicap diode.

A stable source of voltage and a calibrated potentiometer is needed.

Also, the current project I am working on requires varicap diodes so I took the opportunity to also help me test and choose various diodes for this project. This jig lends itself nicely for this purpose.

The circuit used is shown in Figure 2.

A three terminal regulator is used to provide a stable 10 Volts DC to a 10 kilohm log pot.

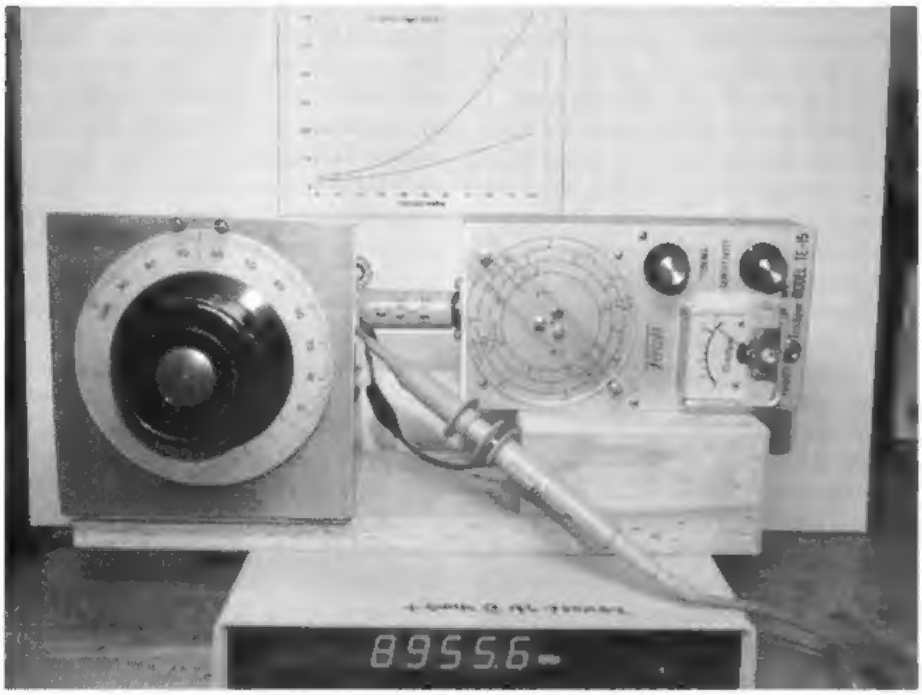

Photo 1: Front view of the dip oscillator helper.

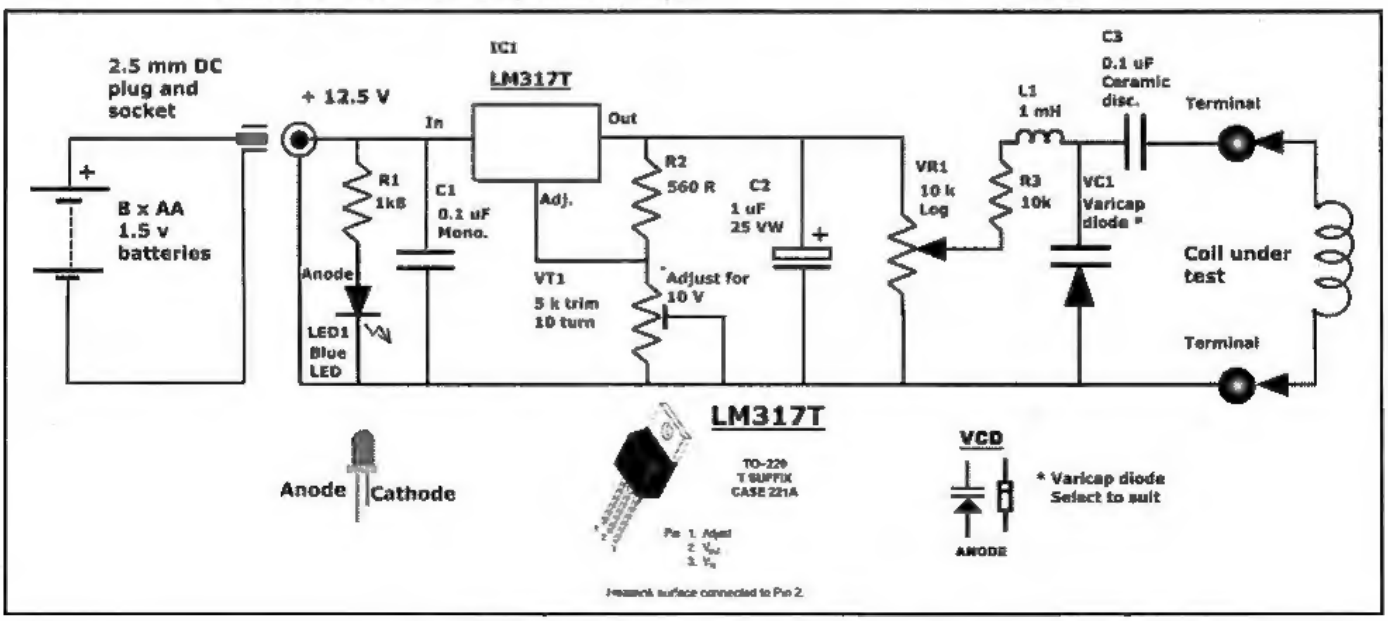

Figure 2: Circuit of varicap version of dip oscillator helper.

The pot is wired in such a way as to counter the non linear curve of the diode and produce a more linear reading of capacitance versus pot rotation. To check the law of the pot, simply rotate the shaft to the midpoint, and measure the resistance from the wiper terminal to either end.

A linear pot will show half the total value, whilst a log pot will read something like 20% to one end, and the remaining 80% to the other end. The exact amount depends on the exact law of the pot, and it can be as much as 10% and 90%.

In my unit, the pot is wired such that the resistance between the moving arm and the ground connection measured 727 ohms with the pot set at halfway. The resistance to the supply end of the pot measured 8003 ohms.

These figures will vary depending on what type of pot you have. The pot can be as low as 1 kilohm log (10 mA of current) to anything up to 100 kilohm (0.1 mA of current). The reverse biased diode should not draw any current so it does not matter on the exact value. However, too high a pot current will drain the battery quicker.

With the pot connected as above, as the pot turns from the earthy end to half way, the diode reverse bias voltage will rise from 0 to around 0.8 volt. A diode's reverse biased capacitance changes more rapidly as it approaches zero (square law), so by wiring the pot in this way, the capacitance change with voltage is spread out more evenly over the full travel of the pot.

The 360 degree protractor I used has degrees marked in both directions. I used the 0 degree mark for 10 volts (low C), and the 300 degree mark happens to be the other end of the pot travel and gives 0 volts (high C). Direction of rotation is anticlockwise from 0 to 300 degrees.

For simplicity, the components were mounted on a small length of double tag strip, and the coil test terminals were mounted at the same height as for the simple capacitor version so that I could swap the two models over.

A white printable CD was attached to the pot shaft using a tuning gang dial cord drum. A good quality 360 degree protractor was attached to the CD. A small piece of thin enamelled copper wire was soldered behind the dial cut-out as a reference line. The capacitance of the diode was measured at each of the 10 degree dial markings, and a graph drawn up as per the variable tuning capacitor model.

In this case, the capacitance multimeter could not be used to measure the varicap capacitance. These devices use an internal oscillator, and so I was unable to get any sensible readings from my capacitance meter.

So I used a different method to calibrate the dial. A coil of known inductance was attached to the test terminals, and the dip oscillator was used to measure the resonant frequency at each of the 10 degree marks as the dial was rotated. The dip oscillator was coupled to a frequency counter and adjusted for the weakest dip so as to try and reduce detuning due to mutual inductance. I plotted the dial reading, in protractor degrees, against resonant frequency, as read on the frequency counter. These were entered into Excel, and using an equation for resonance, calculated the resulting capacitance for each frequency.

The equation was entered as a cell function for each value of frequency input. A graph was then plotted for the BA163 diode I used.

As the spreadsheet calculation and graphing was easily repeatable, I decided to try various power and zener diodes as varicaps to see if other diodes could also be used.

The results were interesting, and I found that zener diodes have some useful capacitance ranges with reasonably

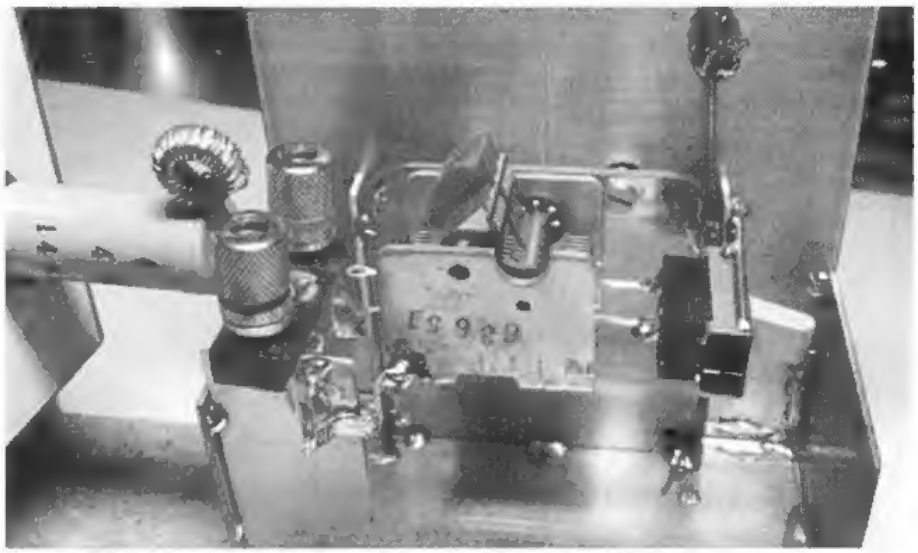

Photo 2: Rear view of the dip oscillator helper.

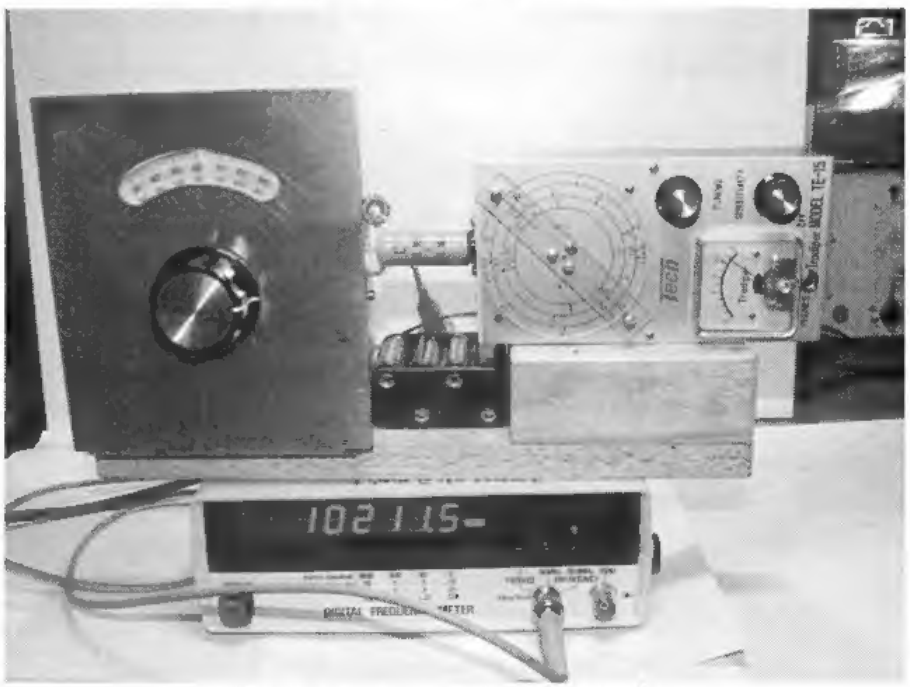

Photo 3: Front view of the varicap version.

low leakage losses. I also found that large power diodes can provide large capacitance swings. Modern power diodes have reasonably low reverse leakage and seem to be quite good as varicaps. A 20 amp Schottky diode from a PC power supply was found to go from 400 pF at 10 volts to 3000 pF at near zero volts!

There is also literature on the web, and in past publications detailing work done by others in this area, well worth looking up.

Below are some of the diodes I tested. The test voltage is from 10 volts to 0 volts.

Power and zener diodes

FR303 3 A fast diode: 33 pF to 103 pF.
BZX70C68 2 watt, 68 V zener diode: 174 pF to 478 pF.
LT406A07 6 A power diode: 66 pF to 272 pF.
MR751 power diode: 111 pF to 376 pF.
BZV85C12 zener diode: 20 pF to 45 pF.
1N5404 3 A, 400 volt power diode: 28 pF to 279 pF.
50P01 fast, high current diode: 404 pF to 3093 pF.

Switching diode

BA482 high speed switching diode: 0.7 to 1.2 pF – as you would expect for a low C diode!
(Corrected for stray C)

Varicap diodes

MV104 varicap diode: 30 pF to 95 pF.
BA163 Varicap diode: 12 pF to 285 pF.

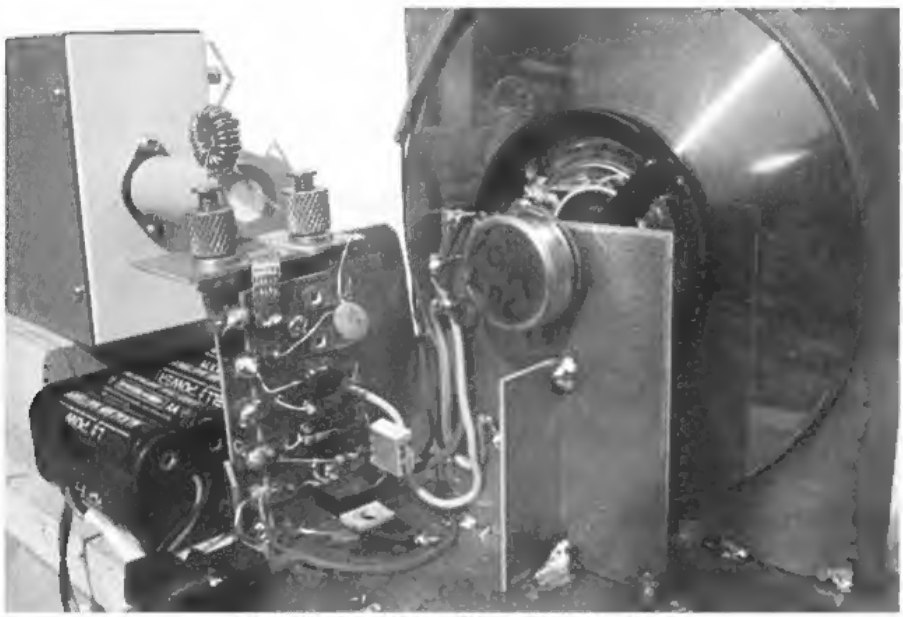

Photo 4: Rear view of the varicap version.

Photo 5: Dial scale of the varicap version.

Parts list

Mechanical capacitor version
C1: Dual gang AM broadcast tuning capacitor approximately 8 pF to 216 pF and 10 pF to 98 pF.
S1: SPDT switch to suit.
2 off screw terminals.
Knob with scale.
Bits of wood and double sided PCB for the construction.
Varicap diode version
2.5 mm DC plug wired to battery holder and 2.5 mm DC socket on unit.
Battery holder for 8 AA batteries.
C1: 0.1 uF monoblock ceramic.
C2: 1 uF 25 V working electrolytic capacitor.
C3: 0.1 uF disc ceramic.
IC1: LM317T adjustable 3 terminal regulator (2 volt or less dropout).
Knob and scale to suit.
L1: 1 mH RF Choke.
LED1: Blue led.
R1: 1.8 k
R2: 560 R
R3: 10 k
Terminals, to suit.
VR1: 10 k log pot 24 mm diameter.
VT1: 5 k 10 turn mini trimpot.
VC1: varicap diode to suit.
Drafting protractor - 360 degrees. Mine was a good European protractor unit with a thick bevelled pencil edge, and cost $4.00 from a large office supply company. It was exactly the same size as the CD!

If anyone is interested, I can supply copies of the Excel spreadsheets for the calculations and graphs for all the above diodes, and the calibration charts, and so on. Please email me at destefano@dodo.com.au

ar

Silent Key

Richard Cory ex VK2RP/VK4DIH

Richard Cory ex VK4DIH, and known as Dick, passed away recently at 92. He hadbeen an amateur radio operator for many years, initially in the Sydney area around Lindfield, and then North Ryde.

His call sign then was VK2RP, before he moved to Groper Creek in 2002 where he acquired a new call sign, VK4DIH. He passed away in a nursing home in Home Hill on 15th September, 2009.

Submitted by his daughter, Lyn Dowe. **ar**

Understanding and testing choke coax baluns

Paul McMahon VK3DIP

While one of the physically simplest forms of balun available, the coaxial cable choke style balun tends to be poorly understood. This article is intended to help with this understanding and to show simple ways that these sorts of baluns can be tested with readily available test equipment.

The coax choke style balun has been around for some time; early versions used quarter-wave stubs, sleeves, or even just large coils of coax. Most modern versions however, used by hams, tend to use some form of ferrite sleeve. All of these use the same basic principle of trying to place a high impedance (high at least relative to the load impedance) in series with the unwanted RF current flowing on the coax cable outer back down to earth. For an example of the use of this sort of balun see Reference 1.

Balun theory

To understand what is going on here we need to first talk a bit about the types of loads and or sources we are using. The normal three types a ham will come across are shown in Figure 1: Types of loads at the foot of this page.

The first two types, unbalanced and balanced, are probably the most commonly mentioned, and it is of course from these two that the BALanced to UNbalanced convertor or BALUN name comes. The third type, or floating is actually more common in practice but it is frequently left out of discussions. Also often left out is the full description of these types, which are:

- Unbalanced with respect to (typically) earth.
- Balanced with respect to (typically) earth.
- Floating with respect to (typically) earth.

In ham usage these are most usually with respect to an RF earth but they could be with respect to any reference point that made sense. Just to cut down on the number of words needed in this article it should be understood that when I say unbalanced or balanced etc. I mean with respect to RF earth.

While each of the load types shown in Figure 1 has the identical load impedance of R between the two input terminals A and B, the impedance from each terminal to earth is different as shown in the 'impedance by load' table below.

Typical ham examples of these types of load are things like:

- Unbalanced – yagi antenna with a gamma match, resistive dummy load.
- Balanced – folded dipole (centre tap earthed), multi-turn loop (centre tap earthed), ideal dipole.
- Floating – resistor in mid air, non-ideal dipole.

We have talked about these types applying to loads so far but they are equally applicable when talking about sources.

Typical ham examples of these types of sources are things like:

- Unbalanced – coaxial output of a transmitter.
- Balanced – centre tapped (earthed) output of a transformer/ATU.
- Floating – non centre tapped (non earthed) output of a transformer.

We can also talk about these sorts of things with respect to transmission lines but in this case there is really no floating type. Typical ham examples of these types of transmission lines are things like:

- Unbalanced – coaxial cable.
- Balanced – twin lead.

It is pretty straight forward to assume that the best way to connect an unbalanced source to an unbalanced load would be to use unbalanced transmission line, and similarly for the balanced case. The problem however comes up when the ham wants to connect, say, an unbalanced source to a balanced load.

Leaving out for the moment the complication of the transmission line, and just considering this problem at lower frequencies or even DC a simple connection between these two different types is shown in Figure 2 immediately below.

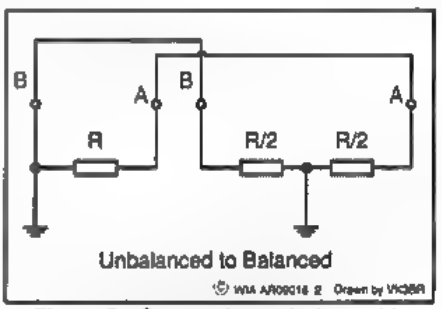

Figure 2: Connecting unbalanced to balanced.

	Unbalanced		Balanced		Floating	
Terminal	A	B	A	B	A	B
Impedance Terminal to Earth	R	0	R/2	R/2	HI-Z	Hi-Z

Table: Impedance by load.

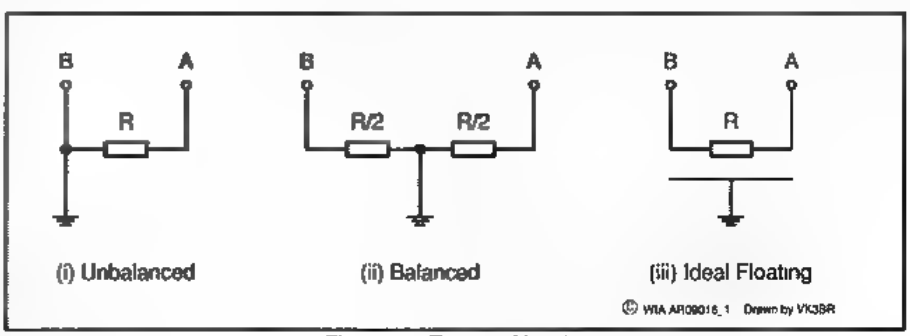

Figure 1: Types of loads.

Examination of this circuit shows the key problem with this sort of connection, effectively the left hand R/2 of the balanced portion is shorted out with both sides connected to earth. Apart from the resulting impedance mismatch of R to R/2 which would lead to reflections or matching losses, if the balanced component was a load and this load was an antenna there would be significant distortions in the current distributions in the antenna and thus the antenna pattern. While the ham would not normally want these bad effects, this sort of connection is often desired as in the case of connecting a transceiver to a wire (ideal) dipole.

This is where the concept of a balun comes in. A balun can be thought of as a black box with two terminals on each side, that is, four in all. One set of terminals looks like a balanced source or load, the other set looks like an unbalanced source or load. This device when inserted (the right way around) between the source and load of Figure 2 looks like an unbalanced load to the unbalanced source, and a balanced source to the balanced load. See Figure 3.

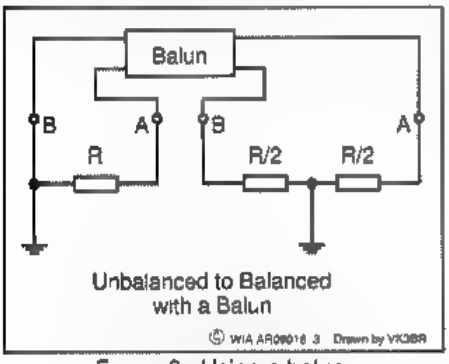

Figure 3: Using a balun

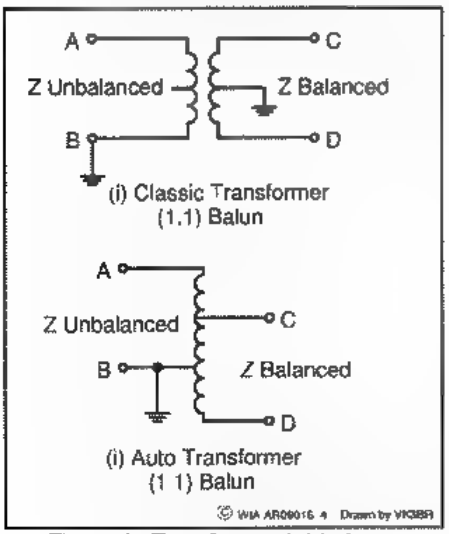

Figure 4: Transformer 1:1 baluns

One obvious method of making a balun, as we are talking about RF, would be to use a transformer. An advantage of a transformer would be that there is an opportunity to also change impedance from one side to the other based on the square of the turns ratio, if necessary. For many practical antenna cases we only need the one to one case so this could be realised using either of the schemes shown in Figure 4.

In ham work the more common of these two is probably the auto transformer case shown as item (ii); this is usually wound with a tri-filar (that is, three wires at once) winding to keep inter-winding capacitances even. Both of these schemes enforce the balance of the output side due to the hard earth centre tap, helping to counteract any unbalance in the load. Neither of these cases is, however, the choke style balun we are trying to get to, but a basic understanding of the story so far will help later.

So far we can see that connecting like to like (that is, unbalanced to unbalanced, or balanced to balanced), is good and unlike to unlike (that is, unbalanced to balanced) is bad. There is however the third type of source/load mentioned earlier, the floating case. Figure 5 shows the case of a floating source being connected to a balanced load.

This case looks very similar to Figure 2. The only difference being that the B terminal on the source is no longer earthed. In this case the left hand R/2 is no longer shorted out so matching is fine and while we are not reinforcing the balance of the load we are also not doing anything to distort it, so our ideal dipole can stay ideal So connecting a float to a balanced is also OK. Similarly, Figure 6 shows the float to unbalanced case

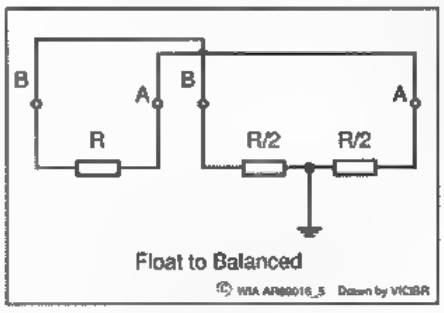

Figure 5: Connecting a float to a balanced.

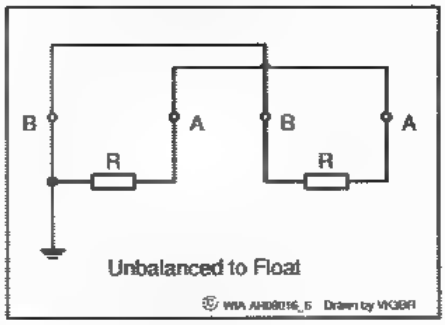

Figure 6: Connecting unbalanced to a float.

Here also there is no particular problem so we can see that basically float to anything is fine; all we need is a means of obtaining it.

Figure 7 shows two similar looking cases of an unbalanced source connected to a load via nominally unbalanced transmission line, that is, coax.

The difference between the two cases is that in (i) both the load and the outer of the coax are connected directly to earth at the load end, and in (ii) they are still connected to earth but only indirectly via the outer of the length of coax to the earth at the source end.

As any ham knows who has tried to get a good earth in a second story shack, an earth on the end of any length of wire quickly becomes a not very good RF earth as the length of wire gets greater. This effect is caused by the primarily inductive reactance of this length of wire, which in our case above is the outer of our bit of coax.

By the nature of the coax transmission line the power flowing inside the coax doesn't experience this as the inductance is effectively cancelled out by the cable capacitance, but on the outside there is no capacitance, and currents flowing here only see the inductance. This effect can be represented by a combination of an ideal float to unbalanced converter (which we might call a FloatUn) with one side of the floating output connected to earth via a primarily inductive reactance.

Effectively we have separated the currents flowing here into the desired

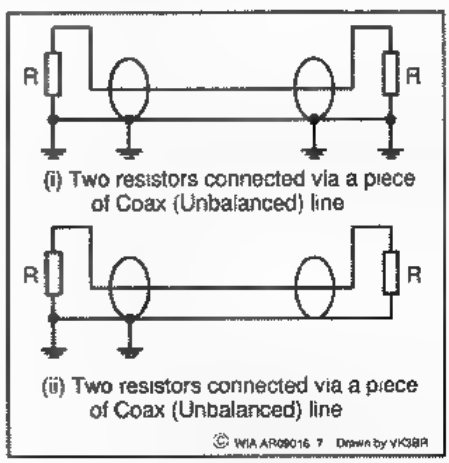

Figure7 Coax transmission line.

ones flowing on the inside of the coax, that is, through the ideal FloatUn, and the non desired currents (that flow on the outside of the coax) flowing through Z to earth. This is shown in Figure 8.

We can see that if Z is sufficiently

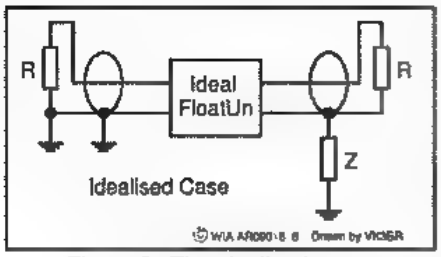

Figure 8: The idealized case.

high compared to R so that the unwanted current becomes negligible, then our piece of coax can behave as an ideal float to unbalanced converter. The value of Z without adding anything else to the outer of the coax depends primarily on the length and configuration (that is, if it is coiled or straight) of the coax. Further, as seen above, a float can connect happily to a balanced so in fact a long enough piece of coax, especially if it is coiled, will work perfectly fine as a balun.

While in extremes you could manage with just the coax it is usual to add bits to the end in an effort to increase the value of Z. In practice Z can be made up of inductive reactance, and loss resistance, the latter especially if a ferrite sleeve is used. Similarly the use of quarter-wave sections with the short to the cable braid a quarter-wave away from the load end is achieving the same thing, as a quarter-wave away from a low impedance (that is, short) is a high impedance.

A number of ferrite beads or sleeves at the load end are especially convenient for increasing Z as they- at lower frequencies due to their high permeability - increase the inductance; and at higher frequencies permeability decreases but loss resistance increases more. Because of this it is possible to make quite wide band Floatuns that can be used as baluns as opposed to the narrow frequency dependence of a quarter-wave section. It is also of course possible to make wideband transformer style baluns but that is another story.

At this point just to fit in with convention I will drop the name Floatun and stick with common usage of calling this a choke coax balun, or just balun for short. The choke of course comes from the description of the virtual component Z which is effectively performing the role of a RF choke for the unwanted RF current. While the device is not in itself balanced, we have said that its floating output is compatible with a balanced input, so this device can perform the function of a balun, so for simplicity we call it a balun.

It is possible in some special cases that you may need to counter the effect of a finite value of Z effectively unbalancing a load. One of the ways this can be achieved is discussed in References 2 and 3. In most cases however the simple case described above will be adequate.

One thing to watch out for with using ferrites is that if you do not have enough to make the choke Z high enough or if you are dealing with very high power then any current flowing in the 'choke' will cause I^2R losses in the ferrite loss resistance and thus heat which will in turn lower permeability and increase losses leading to a runaway effect.

So it is important that you know that you have added enough ferrite not just to know that the balance of your antenna is unaffected. It is of course possible to theoretically calculate how much ferrite is needed, assuming you have access to appropriate data sheets for the ferrite you want to use.

For the typical ham however, who wants to use those nice looking beads he bought lots of on special, but which he hasn't been able to get data for, this can be a problem.

Which brings us to, how do we test a balun?

Balun Testing

While the techniques discussed here can be applied to many different sorts of balun devices the focus here is on the choke coax balun.

The simplest way to measure a balun's effectiveness is to connect it up through the appropriate adaptors to your vector network analyser, or failing that your vector impedance meter. If, however, like most hams you do not have either of these there are other techniques that can be used with no more than a transmitter and VSWR/power meter. A signal generator, return loss bridge, and calibrated attenuator/receiver are helpful but not essential.

Both of the two techniques to be described here require at least a small amount of construction of a special jig to mount the balun under test on. There is not a lot required of the jig, which basically consists of a sheet of PCB material to form an earth reference plane and a couple of connectors of whatever variety you use. In my case the PCB was about 20 cm square, and the connectors I used were 'N' type, both through-hole chassis mounting, one solder to female, and the other, female to female. Placement is not critical, pretty much wherever is convenient will do. See Photo 1. In theory the reference plane should be infinite but again pretty much what ever you have got will do so long as there is a very good earth connection between the two connectors, and there is room to solder on the bits of balun you are trying to test. See Photo 1: The base test jig.

In both cases I will describe the tests here only in terms of a transmitter and VSWR/power meter but as mentioned a RLB if you have one will actually give more detailed readings. For more details on a suitable RLB and how to use it, see Reference 3.

Test 1: The centre tapped load

The first of the two types of test uses just the female to female connector. This test basically uses the cases diagrammed in Figures 2 and 5 above, where we discussed the connection of a float to a balanced. In this case if the balun under test is working correctly as a float source then when we connect an appropriately valued centre tapped balanced load we

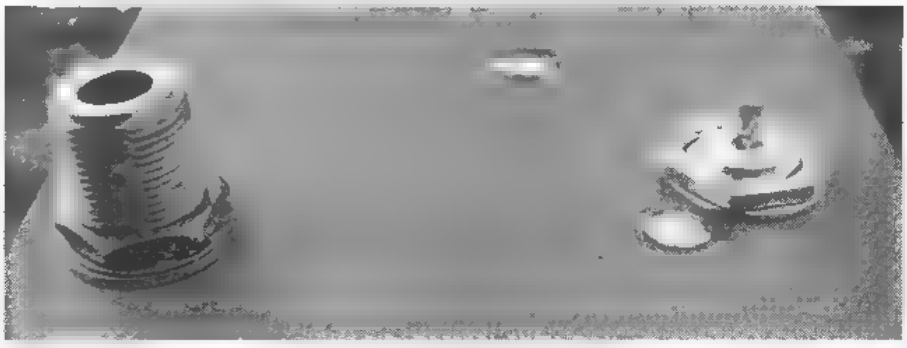

Photo 1: The base test jig.

should have a good match and thus close to 1:1 VSWR. In a 50 Ω system this would mean using two 25 Ω resistors (each made from say 4 x 100 Ω resistors in parallel). If the balun is not working well we should get somewhere from, ideally, a 2:1 VSWR in the no balun case to a 1.1 if we lift the connection between the resistors centre tap and earth leaving two 25 Ω resistors in series to form a 50 Ω load.

The test setup would be as diagrammed in Figures 9 and 10.

You should test your setup with a multimeter on a low Ohms range before applying any power, and without the VSWR meter attached you should measure a DC resistance across the input connector to the jig of 50 Ω with the centre tap NOT earthed to the reference ground plane, and 25 Ω with the centre tap connected to the reference plane. In my case I just tack solder the centre tap to the PCB as required rather than use an actual switch.

This is a very straight forward test; connect the transmitter and VSWR meter up to the jig and start with a short (30 cm or so) length of coax with no ferrite sleeves etc. connected to the load with the centre tap floating. This should give you an indication of the best possible VSWR you will be able to get with your test setup.

If you can't get a good VSWR at this point without the balun then rearrange the load and don't continue on until you do. At HF the lead lengths and configuration of the resistors should not be a big issue, but as you move to VHF you will need to be more careful and possibly even start to use leadless components.

Of course if you are using a transmitter you do need to ensure that the power ratings of the resistors in the load matches the power you will be transmitting otherwise they will go up in smoke. If you use, say, two lots of four 100 Ω resistors in parallel / series or eight resistors in total the total power you can use is eight times that of a single resistor. These resistors should not be wire wound types.

Once you have a good VSWR in the floating centre tap case you can move on to starting to add ferrite cores and observing the change in VSWR, if any, when the centre tap is earthed. The optimum is to get to there being no noticeable difference between the two cases with both being some good, that is, 1:1 value, but in practice if you can get to an acceptably low VSWR then as far as this test is concerned if, when you connect your Balun to a real antenna or whatever, you get a bad VSWR then it is not the balun that is causing it.

A real limitation of this test is the power handling capacity of the load resistors. If you are using a RLB and signal generator this is probably not an issue, but if your VSWR meter needs 10-20 watts before it starts reading then getting a good load could be a problem. This test also does not give you a good feel for losses in the ferrite cores but it is really simple, and worst case you will burn up some resistors.

Test 2: 'It's Magic'

The second type of test also uses the second connector on the test jig and relies on the discussion around Figure 6 above, where we said you can happily connect a floating source to an unbalanced load. In fact if it is a truly floating source the load can be earthed on either end of the load so if your balun (coax choke version) is a true floater then you can connect the wire coming out of the centre of the end of the coax after the ferrite to earth and take the braid out to connect to a load!

The test setup for this is shown in Figures 11, and 12.

You will note in Figure 11 it shows a scrap of PCB being used as a sort of launcher for the solder pin style connector. I found I needed this at VHF to get a reasonable VSWR/return loss; try out your version at the frequency of interest with no ferrite and the connections the usual way around (that is, braid to earth and centre to centre) using a known good dummy load on the output and see what VSWR you get. If it is good enough then you may not need it. If you do have a VSWR problem then have a look at Photo 2 to see how I did it. The bit of PCB had the clearance for the connector pin made using a nibbling device, in my case.

When you have put one or more ferrite sleeves on to test your 'balun' and with the output connected braid to centre pin, coax centre to reference earth, a test with a multimeter on a low ohms range should show a hard (DC) short to earth at the input connector.

However when you connect up the transmitter and VSWR meter to the input and a suitable 50 Ω dummy (or otherwise) load to the output connector you should see a non-infinite VSWR.

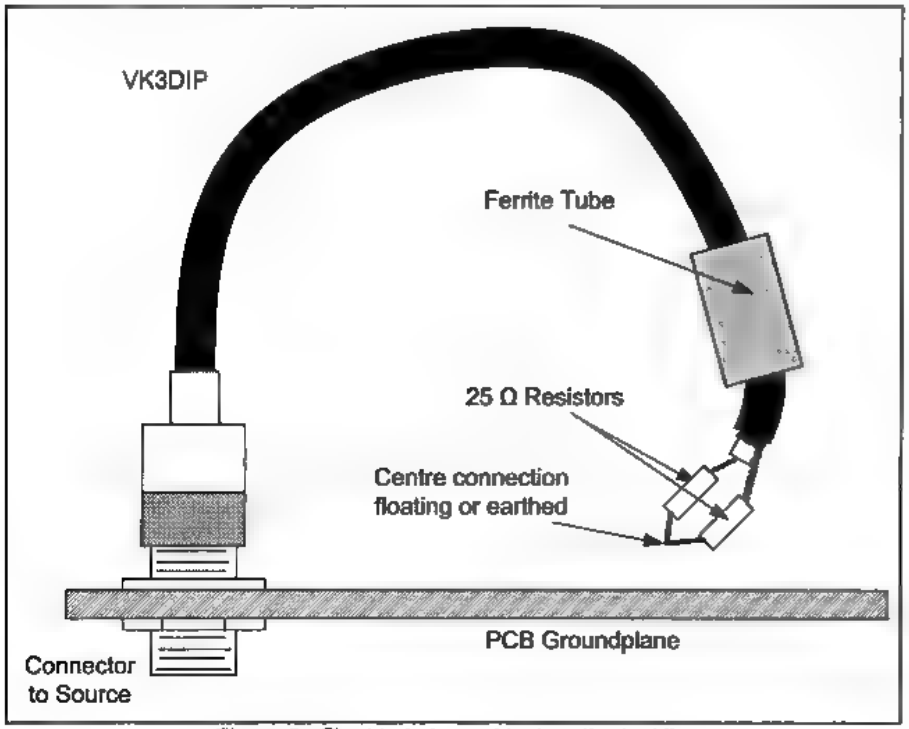

Figure 9: Float to balanced test on the test jig.

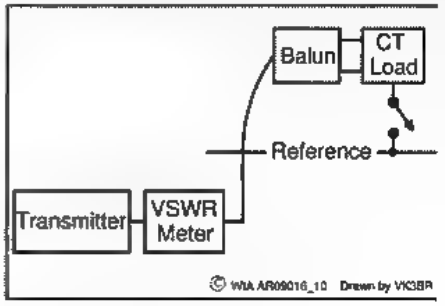

Figure 10: Equipment setup

Further if you move the VSWR meter over to the output port between the jig and the dummy load and use it as a power meter you should see very little power being lost in the balun, that is, power-in pretty much equals power-out. A little bit of caution is required with this test; if you transmit high power and your 'Balun' doesn't have enough ferrite then your transmitter may see a very bad VSWR. It is safest to either only do type 2 tests after you have successfully done type 1 ones, or alternately always start with too many ferrite sleeves and take them off one at a time until the VSWR starts to increase rather than vice versa.

The difference in power readings in and out for this test represents for the main part power being lost in the ferrite As you add more ferrite you should see this power loss decrease (and VSWR get better).

This test provides much more information than the first one and has no particular problems with power. If you have a suitable high power dummy load you can test with whatever power levels you like and actually measure the temperature rise, if any, in the ferrite.

This test is also very good at convincing people that a coax 'balun' actually provides a true floating output. It can be a nervous time the first time you transmit into what looks very much like a wrong and counter intuitive connection, but after a couple of times of connecting the output to the braid and centre to earth it does not seem so bad.

General comments and conclusions

While the output from a piece of coax is conventionally seen as unbalanced it will not always be so. If the coax is not earthed at the load end, and if either the length of coax is long, or something like ferrite is added around the outside, then the output of the coax will actually be more of a floating one.

Even though the output from a piece of coax may be floating it can still perform the function of a balun.

The simple tests detailed here can quickly show you how well your homebrew 'balun' is working, and/or if that surplus ferrite is any good.

If you have a need for DC earthing the feed in line from your antennas then you can make up a boxed version of test 2 and bolt it to your shack (or tower) earth system

The minimum length of coax used for either test 1 or test 2 seems to be reasonably short; around 30 cm works fine for me, but if you get strange readings try it with a longer piece. In fact test 1 and 2 will also work with coax baluns made out of just long lengths of coax coiled and otherwise

Coax choke baluns are very simple to build and test and work remarkably well across a wide band of frequencies. It is truly surprising just how well a length of coax works all by itself

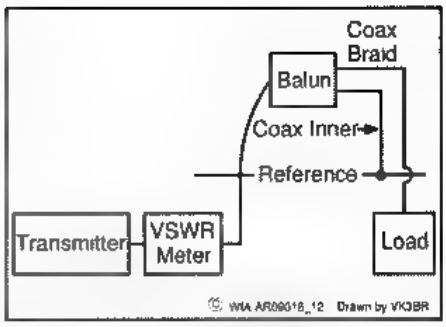

Figure 12: Reversed connections test equipment connections.

Further reading and references

'Simple Wideband Yagis for 2 m and 70 cm' by Paul McMahon VK3DIP - Amateur Radio Magazine September 2008.

'A Simple Wideband Return Loss Bridge Revisited' by Paul McMahon VK3DIP - Amateur Radio Magazine June 2007.

'Further Reflections on a wideband return loss bridge' by Paul McMahon VK3DIP - Amateur Radio Magazine August 2008.

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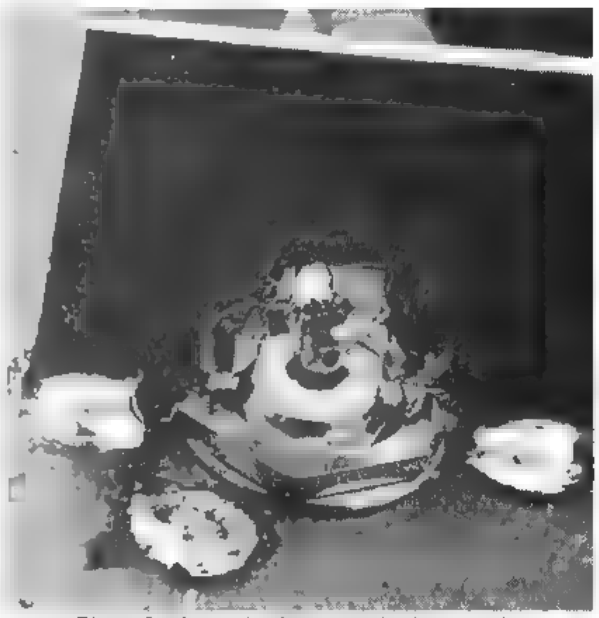


Photo 2: 'Launcher' on jig output connector

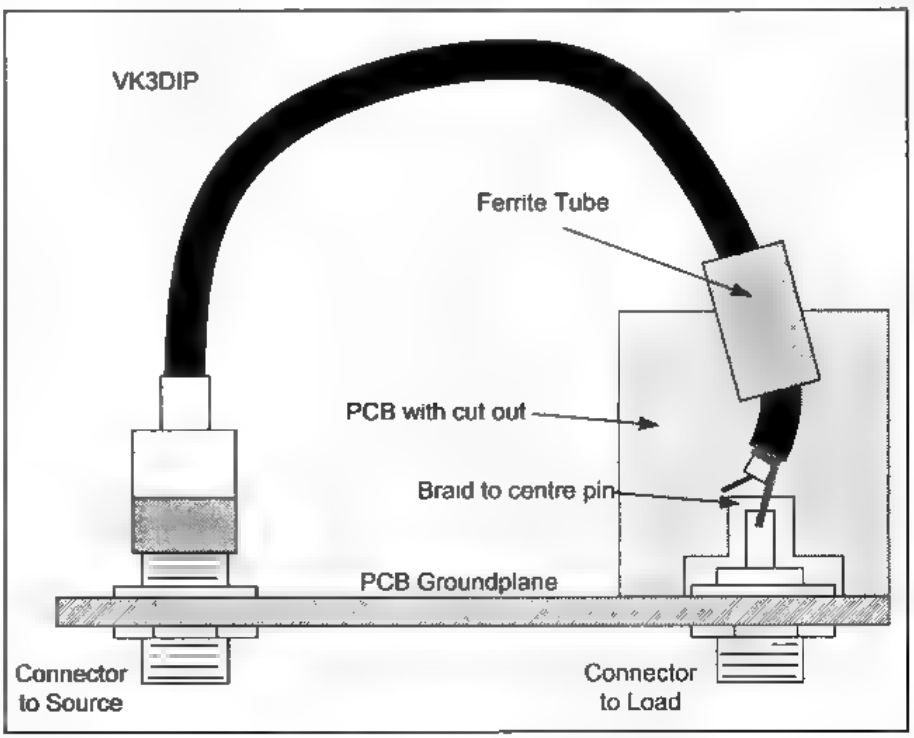


Figure 11: Reversed connections test.

Simple tools

A surface mount component soldering aid

Jim Tregellas VK5JST

In the immortal words of one of those children in one of those television commercials "Slippery little suckers, aren't they?"

I have done quite a bit of surface mount soldering and find this little aid invaluable.

It is placed on top of a component which is being hand soldered, and prevents any movement that may be caused either by vibration or by the surface tension of the molten solder.

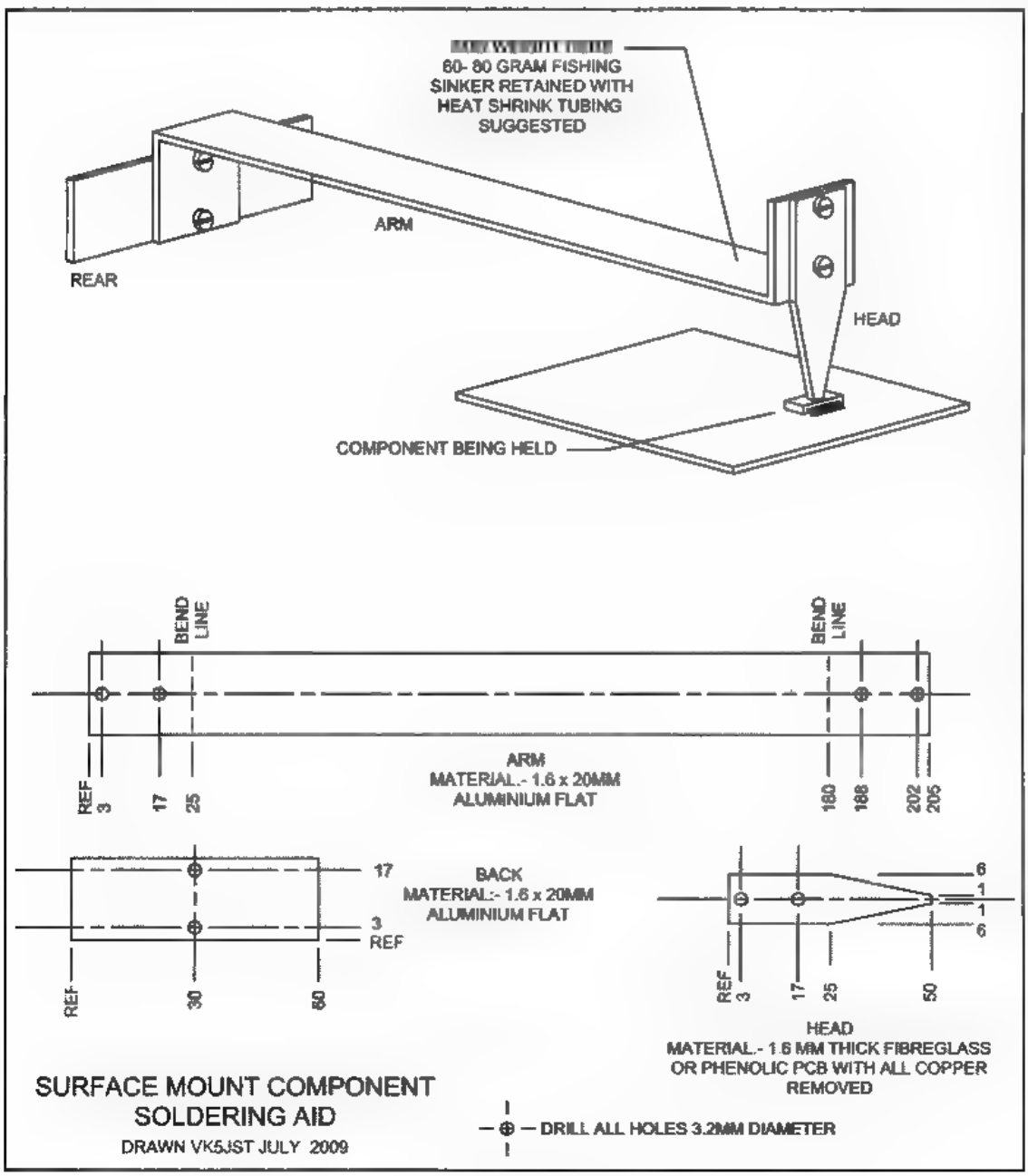
Making it is simple. It is fabricated from standard 1.6 x 20 mm aluminium flat section which can be purchased conveniently at your nearest hardware store, and 1.6 mm thick PCB from which all copper has been removed.

With the dimensions shown, the jig can reach to the centre of a PCB 300 mm square. If you are working on a bigger PCB (wow!) simply extend the arm length.

An added weight of around 60 - 80 grams is about right to stop all component movement, but more can be safely added if desired.

I usually work inside an old tea tray stolen from the kitchen that catches all of the escapees before they can reach the workshop floor.

Good soldering.



The surface mount component soldering aid.

Simple tools

Test tweezers for surface mount components

Jim Tregellas VK5JST

Have you ever received a shipment of surface mount components where the tape has separated on several different component types and the result is a potpourri at the bottom of the box?

Or seen some wonderful SMT components on a motherboard, heated it with a hot air gun, given the assembly a sharp rap on the bench and formed yet another variant of the same potpourri? Or even worse, mixed up some carefully selected and unmarked capacitors during assembly? You need these tweezers.....

The diagram says most of what is necessary. To assemble the tweezers, first cut out the five parts from whatever scraps of FR4 fibreglass PCB you have lying around.

Carefully clean all copper surfaces with steel wool and then, using a few drops of superglue, stick the three spacers together to form a block 4.8 mm thick, 6 mm high, and 32 mm long.

Next stick this block to each of the jaws as shown in the drawing. Solder on your test leads, and finish off by covering the spacer area of the tweezers with heat shrink tubing.

All done!

With a half decent DVM which has resistance, capacitance, and diode measuring features, you can now identify and test most of those mysterious little unmarked blobs.

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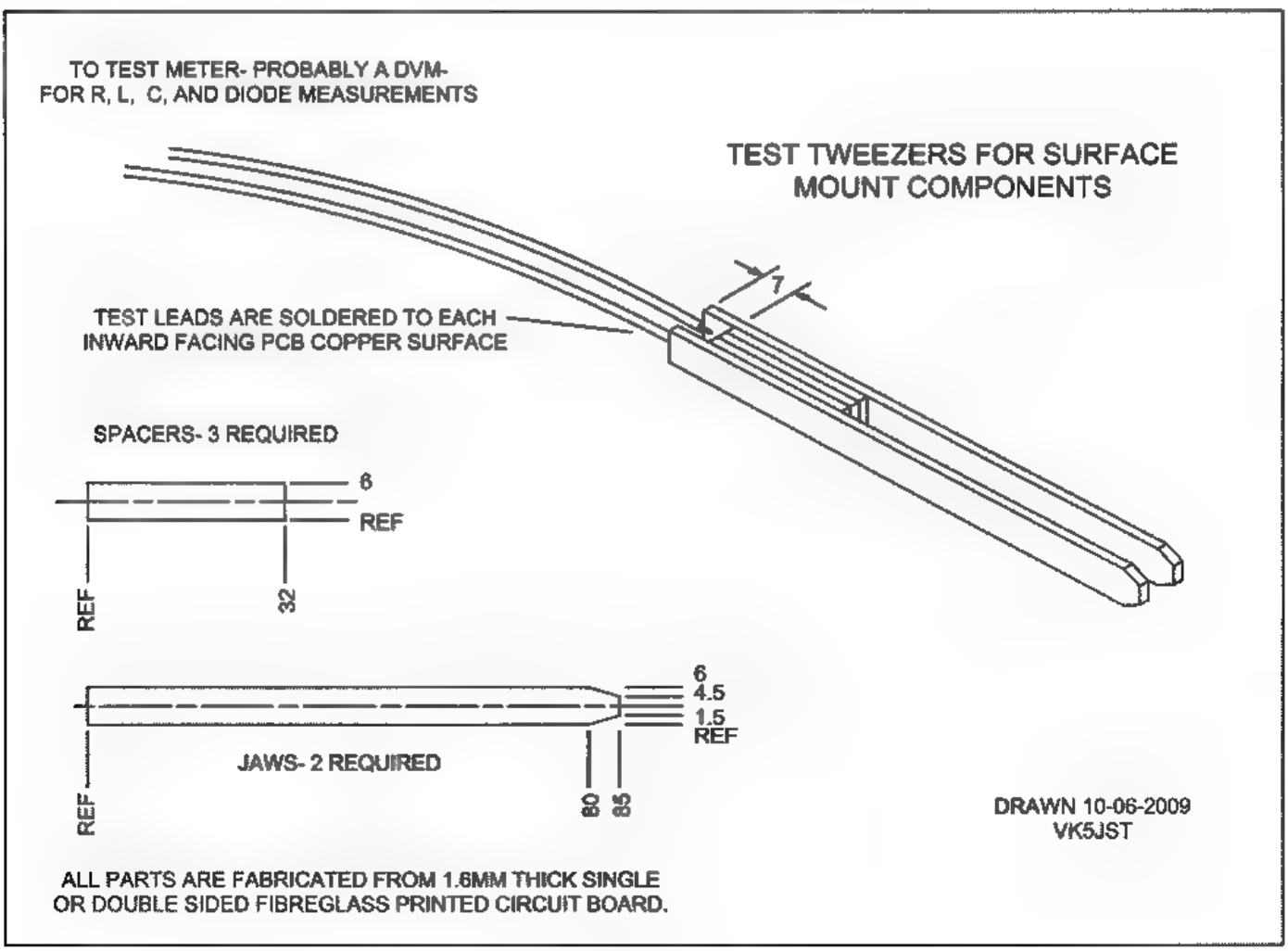
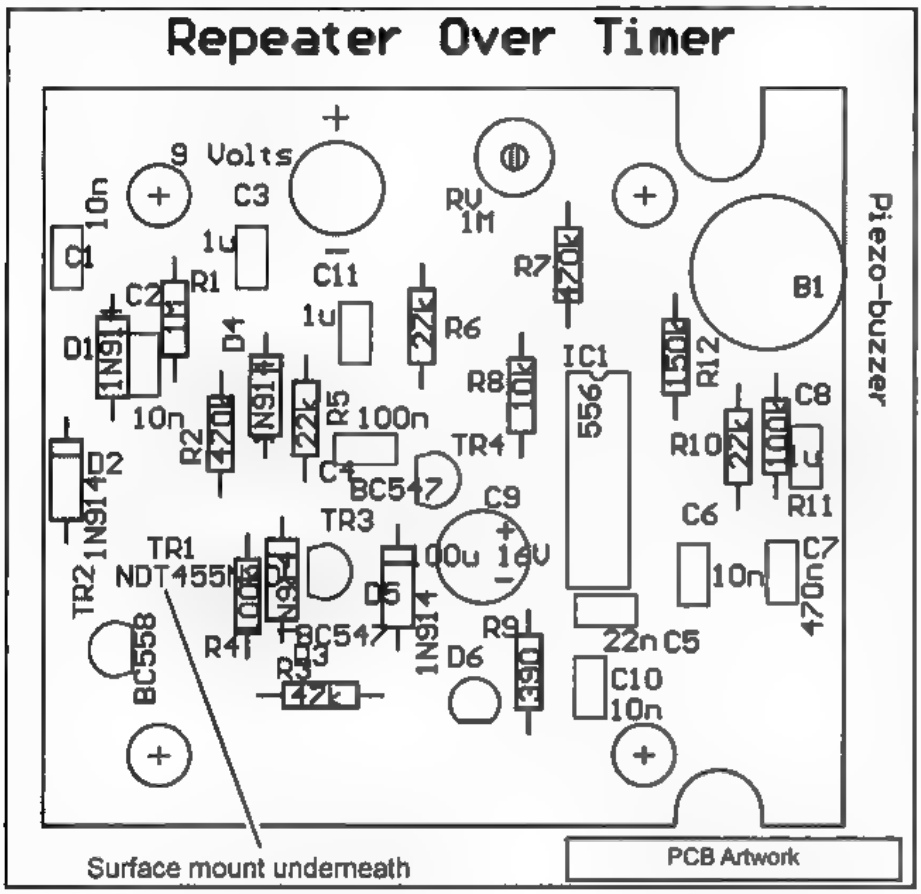


The test tweezers.

A repeater over-timer

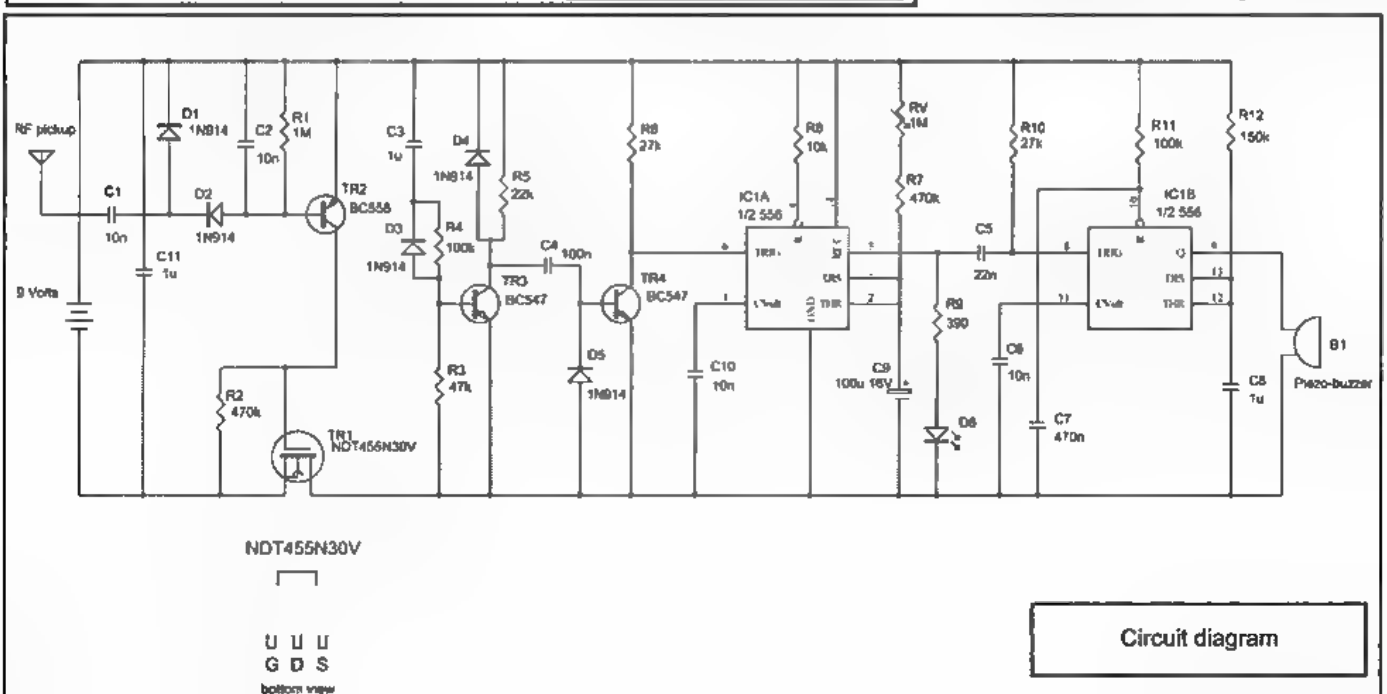
Keith Gooley VK5OQ

Here is a simple timer that beeps after a preset time following the start of transmission to remind the operator not to time out the repeater. It has made a good club project at the Elizabeth Amateur Radio Club here in VK5, enabling members with only limited construction experience to improve on their skills and make a useful gadget in the process.



If you are like me, and I suspect many readers are, then now and again while chatting on a repeater, you get carried away and time out the repeater. A discussion with a friend or a club net can be interesting and engrossing and you can tend to forget time. There have been several attempts to get over this problem in the past. References 1 and 2 give two versions of a timer using a pair of 555-type timers; the second adds an RF actuated facility so that no access to the transmitter PTT line is required. Jim VK5TR (formerly VK5JST), Reference 3, uses a microcontroller to add a "bell and whistle" or two.

The timer presented here is based on Reference 2 but goes a step further in that it is RF actuated but draws only leakage current from the battery when not in use. This means that the timer can be left connected to the nine volt battery and current is only drawn when the VHF or UHF transmission starts. After the beep at the conclusion of the timing period and the operator lets go of the PTT, the circuit switches off to once again only draw a very small current from the battery. Current drawn did not register on the



writer's DMM, which has a resolution of 0.1 microamp.

Circuit Description

The timer circuit itself is centred on IC1 and is essentially the same as that in References 1 and 2. In the quiescent condition with no RF being picked up on the antenna, TR2 is off and so is TR1. This latter device is an N channel MOSFET acting as a switch in the negative lead to the battery. In this condition there is only the leakage current in the MOSFET drawn from the battery. The drain to source diode built into the MOSFET is also reverse biased.

RF coming into the pickup is rectified by the voltage doubler rectifier D1, D2 and the associated capacitors. When the voltage across C2 reaches about 0.6, TR2 turns on pulling the gate of TR1 towards the +9 volt rail. This turns on TR1 applying nine volts to the timer. The two halves of the timer IC are connected as mono-stable multi-vibrators which start the timed period when a negative-going trigger pulse is applied to the trigger pin. As mentioned before the circuit is similar to those published in References 1 and 2. However I found that a better trigger circuit was required in this case where the RF controlled switching can cause the supply volts to be turned on and off several times in succession. TR3 and its associated components provide a delay of about 100 ms or so after the 9 volts is applied before TR4 is turned on. When this occurs, the trigger pulse of about 20 ms is generated. The delay gives the two timer circuits time to settle before the first timer is triggered.

The negative pulse on pin 6 of IC1A starts the main time delay during which the operator will be chatting away on his transmission. RV, R7 and C9 determine the timer period and are therefore the ones to adjust if you want to change the range of adjustment. Pin 5 goes high during the timing period and the LED, D6, is lit. At the end of the period, the second timer is triggered and pin 9 goes high, sounding the piezo-buzzer for about half a second.

The operator is thus reminded he has been yacking on for long enough on the repeater or some might say too long and the PTT is released.

RF pickup

Some experimentation may be required with the arrangement of the RF pickup. A simple length of wire laid near the rear of the radio will be adequate in some cases. Winding the wire around the coax cable a few turns may improve the reliability. In other cases winding the wire around the coax and taking it back to the timer box will be an arrangement less susceptible to RF pickup from other sources such as nearby broadcast stations [3]. The returning wire should be connected to the + battery terminal. It is difficult to be too specific about the precise type of RF pickup required as it depends on the power level of the VHF or UHF transmitter and the level of leakage from the coax.

Construction

The Elizabeth Amateur Radio Club has produced a kit for this project, including a professional PCB. The constructor can use the kit or, of course, make his or her own PCB or build the project on strip board or whatever. The PCB is designed to fit in a nice plastic box, Hammond type 1593N along with the 9 volt battery. Photo 1 gives an idea of the layout, and size, of the unit. Photo 2 is the complete unit.

All references to the PCB assume the board is oriented with the components side up and the piezo buzzer at the top right hand corner. The four holes for the pins should be drilled out to 1.0 mm and the three for the trimpot RV to 1.1 mm. The single pad between the upper end of R1 and C1 is not used.

Photo 1. Completed PCB in the case with battery.

Photo 2: Complete unit

This is a good project to get started with SMD components because TR1 is one of the largest types of SMD devices available and should be able to be handled by most constructors. Also if you do happen to drop it you have a good chance of finding it again. TR1 should be soldered first to the bottom of the PCB. Hold the device in place carefully aligned with the pads. A toothpick is a good help with this. Solder one of the small pads. Check the alignment again and correct if necessary. Solder the remaining pads and check for shorts.

Turn the PCB over and insert the four diodes and the resistors first. They require the leads to be bent to suit the 10 mm (0.4 inch) pad spacing. A lead bending jig is useful for this if one is available. Once a few components have been inserted in the PCB, turn the board over flat on the bench and solder the leads in place. Some light pressure of the board will ensure that the components are pressed against the board.

Repeat for the remaining resistors and diodes and trim the leads. Fit the '556 (IC1) ensuring the notch in the end of the IC is uppermost. Insert the remaining components and solder them in place. The piezoelectric buzzer should be inserted with the + sign to the top. Solder the four pins in place for the battery and RF pickup.

Drill a 5 mm hole in one of the box end plates for the LED and a 2 mm hole in the other for the RF pickup. While we are drilling, it will be found useful to drill several holes in the box lid above the buzzer. Wire the LED to the PCB using the supplied hook-up wire. Ensure the pin next to the flat on the LED is connected to the lower hole of D6 on the PCB. Solder one end of the 500 mm length of hook-up wire to the pin nearest the top left corner of the PCB and feed the wire through the 2 mm hole in the second end panel. If a shielded pickup (coax cable) is required, solder the centre conductor to the pin nearest the corner of the PCB and the braid to the adjacent pin.

Solder the battery snap wires to the 9 volts + and – pins, red to + and black to the –, of course. The PCB is fixed to the case with either three or four screws; some case halves have only three mounting holes.

Testing the Timer

Fit a 9 volt battery to the snap or connect a bench power supply set to 9 volts. Correct operation may be tested without RF being applied to the pickup wire by connecting the top end of R2 to the positive battery lead using a clip lead.

The LED should light as soon as the clip lead is in place. After the preset time the buzzer should sound for about one second and the LED go out. The preset time is adjusted using RV from about one minute to three and a half minutes. If it is desired to reduce the length of the beep, reduce the value of R12 and conversely increasing R12 will increase the length of the beep.

If all is well, disconnect the clip lead and test the timer with RF from a handheld or other transceiver. As soon as RF is applied, the LED should go on and timing commence. Holding a HH with one watt output anywhere near the timer should be sufficient.

A 2 m mobile radio with 10 watts output will operate the timer with the pickup lead wound around the antenna coax four or five turns. Use of a higher powered radio will require less coupling. If a low powered radio is being used and/or the coax is well shielded it may be necessary to remove 20 mm or so of the sheath of the coax in a convenient position and pass a thin wire under a few wires of the braid. Use the minimum coupling required to operate the timer. Tape up the modified area of the coax.

Conclusion

A simple timer has been described which will remind operators on repeaters when they have been talking on the repeater for long enough. The project has been a good one for the Elizabeth Amateur Radio Club, enabling experienced and less experienced members alike to build a useful device for the shack. Kits for the project are available from the Club. Refer to the advertisement in *Amateur Radio* magazine or go to the Club website at www.earc.org.au

References

1. Austermiller, Keith KB9STR - "An RF Driven On-air Indicator" *QST* August 2004, page 56.
2. Poland, Allen K8AXW - "RF Activated Timer" *QST* January 2007.
3. Tregellas, Jim VK5JST - "The Sniffit" *Amateur Radio* October 2008

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Parts list for Repeater over timer.

Item	Value	Jaycar #	Quantity	Details
Resistor	470k	RR0636	2	
Resistor	1M	RR0644	1	
Resistor	100k	RR0620	2	
Resistor	47k	RR0612	1	
Resistor	22k	RR0604	1	
Resistor	27k	RR0606	2	
Resistor	10k	RR0596	1	
Resistor	390R	RR0562	1	
Resistor	150k	RR0624	1	
Diode	1N4148	ZR1105	5	
IC	556	ZL3556	1	
Buzzer		AB3459	1	
LED		ZD0152	1	
Capacitor	10n	RC5348	4	
Capacitor	1u	RC5499	2	
Capacitor	22n MKT	RM7085	1	
Capacitor	100u	RE6130	1	
Capacitor	470n MKT	RM7165	1	
Capacitor	100n	RC5360	1	
Battery snap		PH9230	1	
Screw	#4 X 6	HP0550	4	
Trimpot	1M	RT4028	1	
Pin	0.9mm	HP1252	4	
PCB			1	
MOSFET	NDT455	36799	1	Rockby
OR	IRLL014		1	Futurelec
Transistor	BC547	ZT2152	2	
Transistor	BC559	ZT2166	1	
Plastic case	Hammond	1593N	1	
Hookup wire			100mm	X2 ribbon
Hookup wire			500mm	RF pick-up wire
Battery	9 volt		1	

Birdsville area emergency —
Amateur radio raises the alarm

Richard Neilsen VK2LET

While on the Blue Mountains Amateur Radio Club DXpedition to Poeppel Corner where VK8, VK5 and VK4 all join we proved that amateur radio is an extremely efficient and fail safe means of communications.

Returning to Birdsville after the 240 sand dunes each way to Poeppel Corner, we refuelled and restocked for the rest of the trip, which still had two other corners, Haddens Corner and Cameron Corner, yet to travel to.

The corrugated roads were slowly taking their toll on the older of the cars in the convoy and the two members in the Pajero, Kevin VK2FTTP and myself, Richard VK2LET had to stop to repair the UHF CB antenna that had rattled loose on the bull bar.

While pulled over, a white van stopped to ask if we required any assistance; after waving the driver off we noticed that he had a flat tyre on the rear of his van, and we tried to warn him but to no avail, and off he drove into the dust.

After a couple of minutes back on the road we heard on the UHF CB that there had been a roll over on the road ahead of us.

Once we arrived we found that this same white van had got out onto the loose shoulder of the road and lost traction; the driver had apparently over corrected and the tyre was shredded from the rim; he had rolled his van three times and it was on its side, leaving him with his head pinned under the pillar and his arm out the door and trapped under the side of the van.

While on the road prior to this event, we had had the pleasure of speaking to many other operators and they were all eager to keep in touch and follow our trip. Kevin VK4KKD from Browns Plains was one of the operators that we spoke to regularly and his cracking signal and arm chair audio meant that we heard him wherever we were.

We, and the trapped driver, were very lucky that when we arrived at the accident scene VK4KKD was already on the frequency. So Kevin VK2FTTP gave Kevin VK4KKD a call and advised him of the situation and he asked all others on the frequency that there was a serious situation and only transmissions between the two of them for the time being.

Richard VK2LET, with others who had arrived on the scene, helped to free the trapped driver and provide first aid while the two Kevin's exchanged details of the situation. From Browns Plains, Kevin VK4KKD called 000 and passed the details on to the Queensland Ambulance Service.

This is where it all got hard, with the 000 operator wanting to know where in Brisbane Birdsville was and what the name of the nearest intersection was to the longitude and latitude that we had given them.

They eventually determined that we were on the Birdsville developmental road about 135 km east of Birdsville. They advised the Royal Flying Doctor Service and made calls to the police and ambulance services in Birdsville.

The Flying Doctor Service sent out a nurse from a nearby station and she provided extended care to the patient and advised us that the ambulance and police were on the way from Birdsville.

While waiting for assistance, another vehicle from our convoy, with Ross VK2VVV and Chuck VK2SS on board, came back to assist. Ross is quite adept in first aid and was a great assistance to the station nurse.

Four police officers who had been helping out at Birdsville over the weekend of the races stopped as they were on the way back to Brisbane.

They did not have communications back to Birdsville and decided that the satellite phone would be of assistance. Once it was unpacked from the box and turned on they then decided that they did not know how to use it; a sight to behold, two police officers holding the sat phone while the other two read out the instructions. This was all to no avail, as they could not get a satellite to lock.

The ambulance and police arrived from Birdsville and took over. We gave some information to the police about what we knew of the incident, and advised them that we had called the emergency services by using HF radio and a network of devoted operators.

The driver of the van was very lucky in a few ways. If it had not been the week after the Birdsville Races he may have been trapped for some time before anybody passed him. Secondly that there were people on the scene that had a means of reliable communications, as there are no mobile phone communications out there.

A positive outcome for all those involved, and a positive outcome for amateur radio.

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Foundation Corner Three

The balun

Ross Pittard VK3CE
vk3ce@amateurradio com au

This month we look at a balun for the half wave dipoles discussed last month. All that is needed is a short length of PVC tube, an end cap and a length of coaxial cable which is your feed line.

As we learnt from the Foundation Manual, a balun is used to convert from a balanced element (the dipole antenna) to an unbalanced element (the coax cable). In this application its function is to reduce the amount of RF current flowing on the outer shield of the coax This will maintain even radiation from your dipole antenna and reduce the likelihood of an RF burn from your coax in the shack!

The simplest form of balun to suit the job is what is called a choke balun. If we wind a portion of the feed line into a coil near the antenna the resultant inductance of the coil isolates the dipoles from the feed line.

The coil can be looped around and fixed with a couple of cable ties but the balun I am about to describe will be wound on a length of PVC pipe.

I purchased a metre length of premium high pressure pipe 50 mm in diameter and an end cap to suit from the local hardware store. I used the high pressure pipe because of its increased wall thickness for additional strength.

First thing to do is work out the required length of coax from the antenna to the radio, to this add another 6.5 metres which will form the choke.

Cut a piece of the PVC tube approximately 300 mm in length.

Drill two 6 mm holes (A and B) 45 mm from the end of your pipe, opposite one another and another one at right angles (C) approx 50 mm from the end, this is the top of your balun –refer Photo 1.

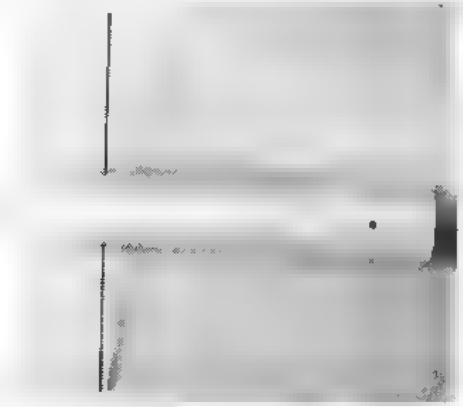


Photo 1: PVC drilled, with a piece of rod through holes A + B for clarity.

Drill the last hole 200 mm towards the bottom (D).

Drill a 6 mm hole in the top of the end cap.

Wind about 40 turns of RG-58 onto the former (pipe) starting from hole (C); leave enough tail through the top to connect the dipoles too, tightly wind down the pipe and feed the rest of the coax through hole (D). Refer Photo 2.

Prepare the coax end, put dipoles through holes A and B, tying them off with a knot inside the pipe. Solder one dipole to the centre of the coax and the other to the coax shield. Refer Photo 3.

Seal the end of the coax with butyl rubber tape, sometimes called self amalgamating tape.

Double check all the connections and test coax for shorts using a multimeter.

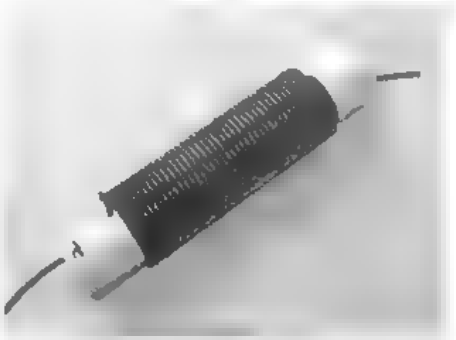


Photo 2 Coax wound onto the former

Photo 3: Top of former showing connection to dipoles

There should be continuity between one dipole leg and the centre of the coax and continuity between the other dipole leg and the shield. Make sure there are no shorts between the inner and outer of the coax. Refer Photo 4.

Assuming all is well, put a 38 mm eye bolt in the hole already drilled in our end cap, firmly securing with a Nyloc nut – Refer Photo 5.

This now becomes the top of our balun and when everything is again double checked can be glued to the top of the balun using PVC cement.

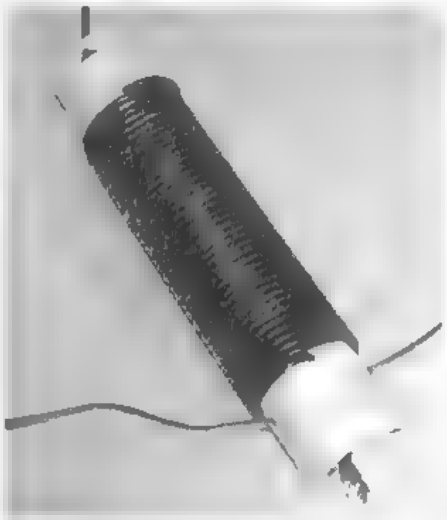


Photo 4: Completed balun without top cap.

The eyebolt is used as an anchoring point for your lanyard to pull the antenna into the air. Refer Photo 6.

Photo 5: Close up of end cap.

As can be seen it is not very hard to build a complete half wave dipole/ inverted vee with balun from odds and ends found in and around the shack. The complete antenna will cost around forty dollars if purchasing everything new from the local hardware store. This is a considerable saving over a commercial antenna, plus you have the satisfaction of building it yourself.

This could possibly be a good construction night activity for Foundation Licensees at your local radio club.

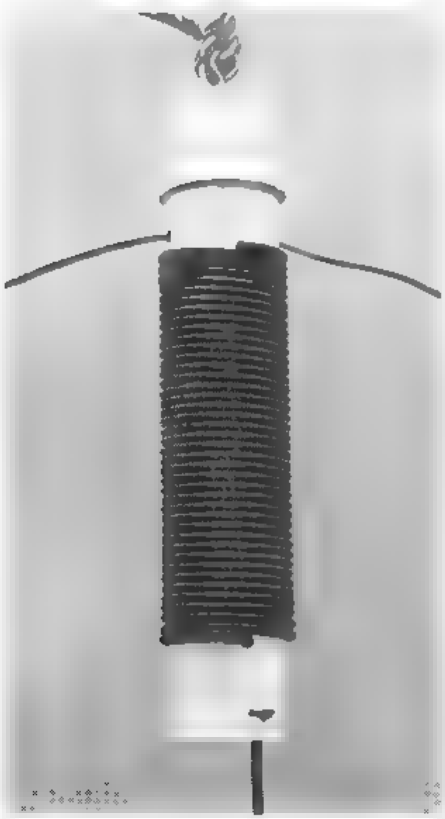


Photo 6: Completed balun up in the air.

Parts required

- 300 mm length of PVC 50 mm high pressure pipe (Bunnings)
- One end cap to suit (Bunnings)
- One small can PVC pipe cement (Bunnings)
- One 38 mm eye bolt (Bunnings)
- Nyloc nuts to suit eye bolt (Bunnings)
- Length of RG-58 coax to suit (Jaycar)
- Connector to suit radio (Jaycar)
- Solder and cable ties (Jaycar)
- One roll of self amalgamating tape (Jaycar NM-2826 or equivalent)

Further Information

A couple of good internet sites with various methods of building a choke balun are:
http://www.qsl.net/ta1dx/amator/broadband_baluns.htm
http://www.hamuniverse.com/balun.html

Contributions

Do not forget, if you have something suitable to publish, feel free to submit it direct to the Editor or to me, and I can collate the material for inclusion in the column. That is it for this month; have fun building the choke balun.

Foundation Corner Two Correction dipole antenna length

A number of correspondents have pointed out that the formula included in the Foundation Corner article on half wave dipoles actually gives the length for a full wavelength at the frequency of interest.

Of course, this length needs to be halved to give the half wave length, so for the 40 m band, the correct lengths are 20.07 meters overall end to end and 10.035 meters approximately for each leg.

Andrew Davis VK1DA also notes the following:

The reference to a 40 m dipole being used "as a 5/8 wavelength on 15 m" is misleading. On 15 m, a 40 m dipole is being used as three half waves, fed in the centre of the centre half wave. Each side is .75 wavelengths on 15 m, not 5/8 which would be 0.625. The 5/8 on 15 m is 8.84 m whereas each side of the 40 m half wave dipole is 10.56 (less end effect in both cases).

Our apologies for missing these errors during proof reading and review of the material. Peter VK3PF Editor. **ar**

Equipment Review:
Icom IC-7600
HF – 6 m all mode transceiver

Bill Roper VK3BR and Ron Fisher VK3OM

At first glance, the IC-7600 HF – 6 m transceiver would appear to be an upgrade from Icom's very successful IC-756 series, but with a newer look. However, do not underestimate this rig. It has many extra features and improvements from the last of the IC-756 series, the IC-756 Pro III, and owes many of its new features to the IC-7700 rather than being a further development of the IC-756 Pro III.

The IC-7600 is similar in size and weight to the IC-756 Pro III. Its dimensions are 340 mm wide by 116 mm high and 279.3 mm deep, and mass is 10 kg. Like the Pro III, the IC-7600 runs 100 watts output on HF and 50 MHz, has a built-in ATU, features a colourful TFT screen dominating the front panel, and does not have an in-built power supply.

However, amongst a number of new features, the IC-7600 has three 'roofing' filters at the first IF, a faster speed DSP (separate DSP units for the receiver/transmitter and for the spectrum scope), and an improved DSP Noise Blanker (the NB in the IC-756 Pro III was analogue).

As with the earlier IC-756 series, the IC-7600 specifications state a requirement for an external 13.8 volt, 25 amp power supply. However, during our tests, which used several different power supplies, it seems that, although the specifications indicate the rig requires 23 amps maximum on transmit, it worked quite comfortably on a standard 20 amp PSU on SSB.

If you intend to use an older PSU, rather than a new Icom PSU, with the IC-7600, beware of the need to have one of the new standard DC four pin connectors! Hopefully, these new style power connectors can be obtained from Icom and their dealers.

Those who have used any of the IC-756 Pro series transceivers will immediately feel comfortable with the IC-7600. The front-panel layout is quite similar to that of the IC-756 Pro III, with the exception that the slightly larger TFT display now takes up some of the space previously used by the analogue meter (which now, in digital form, is incorporated in the TFT screen).

The IC-7600 is of robust construction with a solid die-cast chassis and well-ventilated back panel. The sheet-steel case is finished in a fine black finish and is fitted with a handle on the left side. The front panel has a smooth, black matte surface and all controls are very clearly labelled. The front feet under the case are solid and can be flipped up to enable the IC-7600 to be angled upward for better viewing of the front panel screen and controls.

What can the IC-7600 do?

At first glance of the owner's manual, and the transceiver in action, it seems that the IC-7600 will do just about anything a radio amateur is looking for in a top-notch HF – 6 m transceiver. For example, the IC-7600 includes a dual watch facility (which enables reception on two frequencies within the same amateur band), a very useful facility indeed for the keen DXer and contester, and one which was, strangely, not offered with the higher specification IC-7700.

This rig has so many features that it is not feasible for us to comment in detail on each one. However, here are some of the more important features.

The first thing that strikes you about the IC-7600 is the colourful and clear display which dominates the front panel. This screen size has increased from that used in the IC-756 Pro III to 14.73 cm diagonal and now has a resolution of

Photo 1 - The IC-7600 HF - 6 m all mode transceiver

400 by 240 pixels. The most important thing about the screen that the reviewers noticed was that, unlike the Pro III screen, this one is at full brightness immediately after switch-on. However, it was slightly 'grainy' when compared to the screen on the IC-7700.

The main tuning knob has a knurled Neoprene ring, is heavily weighted and turns very smoothly without any side-play, and has adjustable tension. The tuning rate steps can be easily adjusted in multiple settings from 25 kHz to as low as 1 Hertz.

Another interesting feature is the digital metering which is now included in the TFT screen rather than being a separate analogue meter. It can be switched to resemble a standard analogue meter, an edgewise meter or a bar graph. In the transmit mode the metering can indicate either RF power out in percentage, SWR, ALC level, speech compression level, drain current of the final amplifier MOSFETs, voltage on the final amplifier MOSFETs, and the PA compartment temperature. The IC-7600 metering can also be switched to display all transmit parameters simultaneously in a bar graph presentation.

For radio amateurs not used to the current state of digital meters, when using the IC-7600 metering system in the simulated analogue mode, at first glance it is hard to accept that you are not watching an analogue meter.

Unlike the IC-756 Pro III, which employs a triple conversion receiver, the IC-7600 uses a double-conversion superheterodyne system, with IFs at 66.455 MHz and 36 kHz. Although more difficult to implement, this double conversion system is intended to considerably reduce signal distortion. Suffice to say, received signal quality on the IC-7600 is outstanding.

A high stability master oscillator is used which makes for a very frequency accurate and stable transceiver.

As with all other Icom DSP transceivers, the IC-7600 offers fully configurable receiver IF selectivity filters for all modes of operation. Three default filter selections are available for each mode, with continuously variable bandwidth available via the Filter Menu. In addition, there are selectable Sharp and Soft shape factors available for SSB and CW.

The IC-7600 is fitted with 15, 6 and 3 kHz roofing filters at the 64.455 MHz first IF. The Filter Menu allows any one of the three roofing filters to be used with each of the three IF filter selections.

The DSP-based twin Pass-Band-Tuning controls operate in exactly the same manner as on the IC-756 Pro series and are very effective in reducing signal and noise interference to the received signal. Numerical and diagrammatic bandwidth displays on the TFT screen facilitate use of this feature.

Icom have provided new features in the IC-7600 for the CW enthusiast. The APF/TPF button selects the Audio Peak Filter (APF) in CW mode, and the Twin Peak Filter (TPF) in RTTY mode. The APF offers Sharp and Soft shape factors, and three bandwidth selections, WIDE, MID or NAR BW by pressing and holding the button.

The spectrum scope on the IC-7600 has been upgraded in several aspects from the IC-756 Pro III. The scope span has been increased to +/- 250 kHz, which is the same as the IC-7700 and the IC-7800, and the minimum bandwidth has been decreased to 100 Hz, again in line with the IC-7600 and the IC-7800. Also, the scope's speed is now adjustable.

Incidentally, having used the spectrum scope feature on several Icom review rigs in recent times, the reviewers always find it difficult to go back to a transceiver which does not have this facility.

The tuneable manual notch filter, which is inside the AGC loop, is extremely effective with a stop band attenuation of at least 70 dB. Whereas the notch width was fixed in the IC-756 Pro III, the manual notch filter in the IC-7600 has three width settings. This manual notch filter suppresses an interfering heterodyne before it activates the AGC.

The auto notch filter comes into play after the AGC, and suppresses single and multiple tones. However, strong undesired signals can still cause AGC action. The manual notch filter and the auto notch filter are mutually exclusive and the auto notch filter is inoperative in the CW mode.

The DSP noise reduction facility works as well as that in the IC-756 Pro III, and is very effective. As expected, when the noise reduction level is increased, there is a slight loss of high frequencies in the received audio.

The IF-level DSP-based noise blanker is a strong feature of the IC-7600. It is extremely effective in suppressing fast-rising impulse noise spikes before they stimulate AGC action, many of which would otherwise cause AGC clamping. The noise blanker threshold, depth and width are adjustable, and it works rather well in conjunction with the noise reduction facility. Strong adjacent

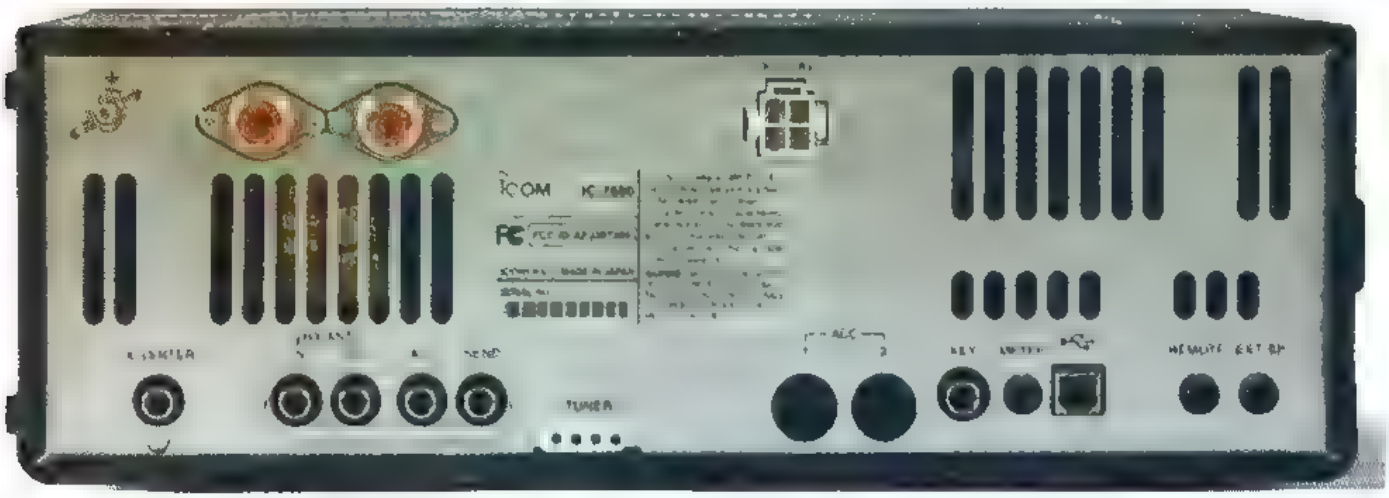


Photo 2 - IC-7600 back panel

signals can still create modulated distortions in the receiver, so only use of the minimum level of noise blanking is needed to reduce the noise impulses to a satisfactory level.

The IC-7600 has dual AGC loops with Slow, Mid and Fast settings which can be menu adjusted for optimum effect. Press and hold the AGC button on the left hand edge of the TFT screen for one second, and the AGC decay timing menu pops up on the screen, enabling setting of the timing range on each of the Fast, Mid and Slow positions of AGC. Each mode of operation has settings specifically for that mode.

In practice, the AGC is very smooth in operation and does not seem easily susceptible to strong signal overload. The stated third order intercept point for the IC-7600 is +30 dBm, with a dynamic range of 104 dB, which is an excellent result for a mid-range HF transceiver. However, it should be noted that the third order intercept point remains the same as the IC-756 Pro III, which is 10 dBm down on that achieved with the IC-7700 and the IC-7800.

.....the IC-7600 includes a dual watch facility (which enables reception on two frequencies within the same amateur band), a very useful facility indeed for the keen DXer and contester.....

The IC-7600 has two USB ports. The USB port on the front panel can be used to connect a USB memory stick for reading/storing a wide variety of the transceiver's information and data, and inputting updated firmware, as well as connecting a USB keyboard for RTTY and PSK operations. The USB connector on the rear panel of the IC-7600 is used to connect the transceiver to a PC (personal computer) This is the only connection required between the IC-7600 and the PC – no interface is required. Download the Icom USB driver from the Icom website and you can be on the air with computer control of the IC-7600.

Note, however, that, unlike the IC-7700, the IC-7600 does not have a video output connector to enable use of an external monitor.

The IC-7600 has a built-in receive and transmit audio equaliser which has separate bass and treble adjustments for a total of 121 combinations. This enables you to adjust the tonal quality of your transmitted voice signal as well as the receiver audio. In addition, on transmit the bandwidth is selectable from 100, 200, 300, and 500 Hz at the low-pass edge, and 2500, 2700, 2800, and 2900 Hz at the high-pass edge, respectively. Three types of high and low combinations can be stored in the memory as favourite settings. With this flexibility, the transmitted audio quality is adjustable to your preference.

On transmit a DSP based speech compressor is available which increases average RF output power up to 20 dB of compression, although the reviewers found that about 5 dB of compression was sufficient.

For the CW enthusiast, a straight key or external keyer can be connected to a ¼ inch (6.35 mm) jack on the back panel, or a keying paddle can be connected to a ¼ inch jack on the front panel to use the inbuilt keyer. Full and semi break-in is available with a front panel adjustment for delay.

With use of the twin PBT (pass band tuning) controls, you can narrow the receive filters for CW down to 50 Hz with an excellent shape factor and steep skirts, and no suggestion of ringing. This is where DSP filtering scores in comparison with standard IF filters.

The IC-7600 has a total of 101 tuneable memories including two scan edge memory channels which are used for setting edges for programmed scans.

The remaining 99 memories, which can hold one frequency and one mode in each channel, are tuneable and can be transferred to the VFO. In addition, each band has three stacking registers which store all operating parameters selected for that frequency.

As with the IC-756 Pro III, the IC-7600 incorporates a digital voice recorder which provides 90 seconds of recording from four memories for transmit messages. On receive a button push enables the last 30 seconds of received audio to be stored in each of an additional 20 memories for playback, a total of 200 seconds!

Another interesting feature of the IC-7600 is the Auto Tune system which tunes the displayed frequency automatically when an off-frequency signal is received within the range of ±500 Hz on CW or ±5 kHz on AM. The IC-7600 also has an automatic frequency control for use with PSK. If a PSK signal is received within the AFC tuning range (default is 15 Hz) the decoder automatically tunes into the signal.

Also, the IC-7600 enables stand-alone PSK and RTTY operation (no need to connect a PC). The received signal decodes on the TFT screen, the outgoing message can be sent from a keyboard plugged into the USB port, and a built-in 'waterfall' display and vector tune indicators help to tune in the signals. There are also transmit memories for messages than can be sent at the touch of a key.

Incidentally, CW operators are catered for very well with the IC-7600. Quite apart from sharp DSP filtering, and the Audio Peak Filter, the IC-7600 incorporates full QSK operation and a smooth electronic keyer.

There are three antenna connections on the rear panel of the IC-7600, two for transceive operation and one for receive only. These antenna connections are manually selectable from the front panel, but can also be locked into the band memories. In addition, there is a connection for an external transverter.

The IC-7600 has an inbuilt, fast acting automatic antenna tuning unit which matches antennas ranging from 16.7 to 150 ohms unbalanced to the transceiver required 50 ohms. On 50 MHz the ATU matches from 20 to 125 ohms. In other words, the ATU will match a VSWR of up to 3:1; on 50 MHz it will match a VSWR of up to 2.5:1.

On the air

The review transceiver was put on the air from both reviewers' radio shacks. In a nutshell, both reviewers were very impressed with this rig except for, initially, the SSB transmit audio quality. The only microphone available was the supplied HM-36 handheld unit. When using the transceiver's default settings, the transmitted audio seemed lacking in high frequency response and produced muffled audio.

However, after playing with the transmitted bandwidth settings (on the low frequency end you can set the cut-

off at either 100, 200, 300 or 500 Hz; and at the high end you can select the cut-off to be either 2500, 2700, 2800 or 2900 Hz) and the shaping of the transmit audio response with the microphone DSP equaliser, the end result was quite acceptable.

We would have liked to be able to try the IC-7600 with one of Icom's quality desk microphones, the SM-20 or the SM-50. We are sure that this would have considerably improved the 7600's transmit audio quality over the best achieved with the HM-36 handheld microphone.

Although there are just under 70 controls on the front panel of the IC-7600, and many of the functions, particularly the setting up of operating parameters, are menu driven, nevertheless the reviewers found operation of the transceiver was quite intuitive compared to some other transceivers we have reviewed in recent years. If you have used any of the modern era Icom transceivers, you will feel quite at home with the IC-7600.

Of course, most of the settings available on the IC-7600 are 'set and forget', so in actual on-air operation of the transceiver, only a small handful of the available controls will be in regular use.

On receive the IC-7600's performance was most impressive. The quality of the recovered audio on SSB was very good, even when using the inbuilt speaker pointing upwards in the top of the transceiver's case. A good quality external speaker improved the received audio quality even further. AM reception was excellent although we found that the AM broadcast stations sounded better in the 6 kHz bandwidth setting than in the 10 kHz setting.

It was also noted that the IC-7600 ran much cooler in operation than the IC-756 Pro III, even after a prolonged period of transmitting

Incidentally, the 173 page instruction book that comes with the transceiver is quite comprehensive and covers everything that a user needs to know about using the equipment. A quick scan of this manual would be very desirable before firing up the IC-7600.

Conclusions

Both reviewers were extremely reluctant to part with the IC-7600. Quite apart from the usual excellent facilities one expects from a transceiver of this quality, the features that stand out in the minds of the reviewers include the outstanding receive audio quality, the effectiveness of the DSP noise reduction, and the usefulness of the spectrum scope.

Although it is a complex example of modern, leading edge communication technology, the IC-7600 is a very easy transceiver to use, and provides an incredible number of adjustments to enable the operator to 'personalise' just about every aspect of receiving and transmitting.

This rig is an excellent example of Icom's dedication to continual improvement in amateur radio equipment, and is a very worthy successor to the IC-756 Pro III.

By shopping around, you should be able to purchase a new IC-7600 from around $5000 to $5500.

Our thanks to Icom Australia in Melbourne and, in particular, Kitty Mau for making the IC-7600 available for review.

Photos by Bill Roper VK3BR

Stationmaster for 40 metres

Paul Whitrow VK5FUZZ

Hello there from VK5FUZZ. My name is Paul and I am located in amongst the beautiful vineyards at McLaren Vale, over-looking the Spencer Gulf.

I have had my F call since October 2007, and at the time I was working which enabled me to buy my radios and set up a G5RV at my QTH.

I enjoy working 40 metres and found it quite challenging to make a contact with an overseas station on 10 watts. The trouble I was having was that overseas stations were working long path and my signal was way down in their noise level. So I listened to the operators here in Australia going back to them, and noted that most of them were working with vertical antennas.

Well this started me looking around for a suitable antenna, but I was put back a bit when I saw the price of some of these antennas, ranging as they did from $400 upwards.

I had retired from my place of employment by now and just could not afford anything like that, so I browsed eBay and saw a new 80/40 metre converted Stationmaster advertised for $169.

I discussed this with a few people and even spoke to the manufacturer, and was convinced this was the way to go. I paid for it on the Thursday and had it at my front door on the following Monday.

Tuesday I started building the antenna, putting it all together after reading the instructions carefully. All the pieces of tubing slid in nicely and all were screwed down; then I checked the length out at 5.23 metres (17ft 2 inches) which I have always known to be the length of a Stationmaster, and slid the tip down to that length.

I did not really want the 80 metre side of it so I got my faithful soldering iron out and removed the tap on the copper coil then counted up 20 rings and re soldered the tap back on the copper coil. I then had to make up a RF choke. This was done with a piece of 90 mm PVC, with ten turns of RG58U on it wound tightly together and held with a couple of plastic cable ties.

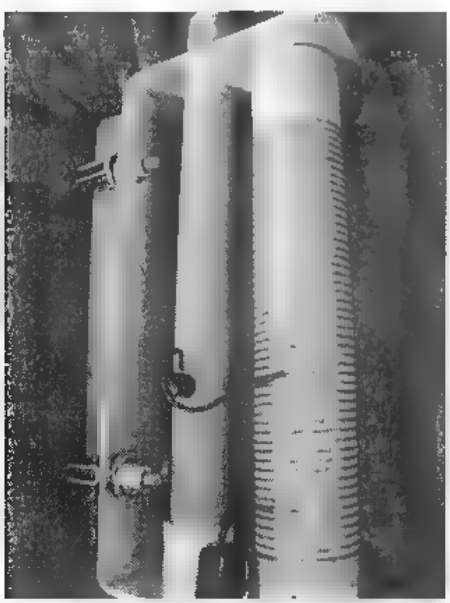


Photo 1. The Stationmaster loading coil, showing the new 40 metre tap. If you look closely you can see the original 80 metre tap.

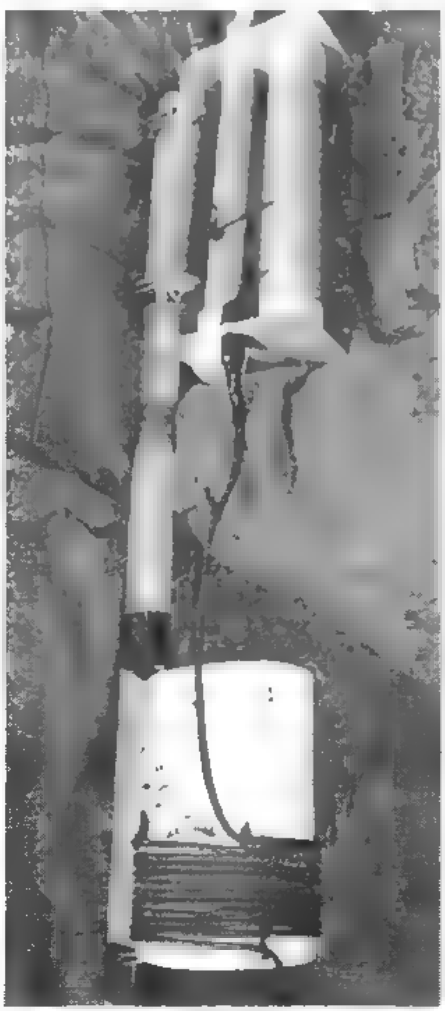


Photo 2: The RF choke, ten turns of RG58U on a piece of 90 mm PVC pipe.

I then found a pole for it and connected the antenna using a couple of 'U' brackets. Now it was time to connect the RF choke to the antenna and I used a joiner to connect the coax (RG213) to the RF choke. I originally tied off the pole to the facia board of the house but got a bad SWR reading because it was reflecting off the roof of the house, so I stuck the pole in a hole in my back yard and the SWR came right down to 1.3.

I have a 14 metre (46 ft) tower herewhich I have been waiting to put up and this antenna is going up on that with two other verticals. I have to use towers as I have a very small back yard.

At the moment my converted Stationmaster has no radials but it is working fine without them, as I have had contacts to NZ and the USA, among others. Once I put it on the tower the guy wires will act as radials for it.

I want to thank John W2VP and Dean VK5LB for their advice and Peter VK3FLVS, the manufacturer, for all his help. **ar**

Photo 3: The Stationmaster, converted for 40 metre operation, 'in the air'.

The WIA 100 Committee Call for Articles

In the October issue of AR, acknowledgement was made to a number of amateurs responding to our "Call for historical articles". Since then some additional material has come to hand.

This month, the Committee wishes to acknowledge receipt of the following:

From Robert VK3ZU, Copies of Experimental Wireless from 1926 – 1930. This magazine started out as the official organ of the RSGB.

From Marilyn VK3DMS, an original condolence telegram sent to the family of the late Sir William Slingo, a leading Wireless and Telegraph Engineer (and a relative of Marilyn), by his friend - Marconi in 1935.

Richard VK7RO has forwarded a significant number of references to magazine articles, newspapers etc. about activities in Tasmania from the earliest days. This information adds greatly to our information on amateur and commercial radio in Tasmania.

Rob VK5RG has forwarded an article about the activities of Radio Inspectors over the years, with particular reference to the Amateur Service.

Thank you to all of the above, but we need more! Please help us to preserve the history of our great hobby by writing something about your club, outstanding member or significant event.

The committee also welcomes articles on the future of amateur radio: the changes foreseen and even predictions for our future. Many new modes are being adopted by the more progressive amateur, how are these going to set the stage for the future amateur?

Errata

VK4 October AR

On page 28 of the October edition of *AR*, the TREC (Tablelands Radio and Electronics Club) managed to get its logo superimposed over the TRG (Tablelands Radio Group) photo taken at the Cooktown Lighthouse Weekend.

In the VK4 column on page 20 and under the TRG input, TREC was mentioned as trying out various antennas instead of TRG.

Please be advised that TREC and TRG, whilst both loosely based on the Atherton Tablelands, are quite different groups with quite different agendas - other than an obvious interest in amateur radio.

Ross Anderson VK4AQ

Foundation Two October

It has been brought to my attention that the calculations for a 1/2 wave dipole on page 10 of October's article are in fact for a full The correct lengths are 20.07 meters overall end to end and 10.035 metre on each leg.

Regards, Ross VK3CE

ar

JARL Ham Fair is a top event

Jim Linton VK3PC*

The 33rd Ham Fair organised by the Japan Amateur Radio League (JARL) and held in Tokyo attracted 31,000 visitors and every one of them seemed to have smiles on their faces.

The JARL Ham Fair 2009.

Before the official opening speeches, musical fanfare, photo call, VIP recognition and ribbon cutting there were radio amateurs lined up and interested on-lookers to the formal proceedings.

JARL President Shoza Hara JA1AN then led the way to the Ham Fair's well-equipped special club station 8J1A, put out a CQ call and logged the first contact.

First contact made by Shoza Hara JA1AN).

The demand to operate 8J1A was extremely high and 30 minute roster spots were quickly filled by eager radio amateurs including a number from overseas.

Speaking later at the Eyeball QSO Party in the New Tokyo restaurant, Shoza JA1AN said he was very happy to see many young people attending the event, reflecting the JARL policy of encouraging more youth to take up ham radio.

Joshiaki Takeuchi, Director of Land Mobile Communications Division, Radio Department, Telecommunications Bureau said he felt an enormous enthusiasm for amateur radio and that the government was providing support for it.

Mr Takeuchi said among the changes made earlier this year was an expansion of the 80 metre band available to Japanese radio amateurs and release of the new low frequency secondary allocation of 135.7 to 137.8 kHz.

Further lifting of restrictions and clarification on the linking of amateur radio to the internet, and further assistance with EchoLink and other Voice over Internet Protocol applications, will be reflected in the band plans.

Electronic licence applications are encouraged to not only make that process more efficient but reduce the cost of licences by 30%.

The JARL Ham Fair, one of the world's top such events, was held on 22 and 23 August at the Tokyo Big Sight, a purpose-built convention centre.

It is difficult to make comparisons, but the *Dayton Hamvention* in the USA that began in 1952 has been the world's biggest for many years, and in Europe, the 34th *Ham Radio* in Friedrichshafen Germany attracted around 17,400 visitors.

Immediately noticeable at the Ham Fair was the more than 160 club booths, exhibiting their history, information on activities and membership recruiting.

There seemed to be a club for every type of activity:

2 metre SSB DX

6 metre CW

The Japan Amateur Radio Teleprinter Society

Far East 'DXPloiters'

29 MHz FM Pacific Repeater Network

JARL QRP club

Fists East Asia

AI Club

Japan Ladies Radio Society

JAMSAT (amateur satellites)

Yokohama Amateur Microwave Association

South East Asia Net SEANET

Among the others were those concerned with RTTY, award

hunting, antique radio, laser light communications and shortwave listening groups.

The manufacturers had mostly walk-through booths exhibiting their wares and a continuous running video display. ICOM launched its IC-9100 transceiver which drew a lot of attention. It delivers 100 W for HF and 6 metres with an inbuilt ATU, 50 W on 2 metres and 70 cm, plus both D-STAR and 23 cm options.

Vertex Standard (Yaesu), Kenwood which was strong on APRS that is gaining popularity in Japan and displaying its concept HF transceiver due to release in 2010, Alinco, Comet, Tokyo Hy-Power, Diamond – they were all there.

CQ publishing, manufacturers of various Morse code keys and paddles, kit providers, and a trash 'n treasure area with plenty on offer all attracted plenty of interest.

Kit building appeared to have quite a following in Japan and a special area was set up to allow anyone to have a go, with quite a few father and son teams among the solder smoke.

The DXCC desk was busy, with the ARRL Membership and Volunteer Programs Manager, Dave Patton NN1N among those checking cards.

He reported there were 265 applications for the DXCC involving more than 3,000 cards being checked on the two days. News that DXCC accreditation of 7O1YGF Yemen had been approved spread quickly resulting in that card being presented.

The DXpedition by German radio amateurs in April 2000 made 35,000 contacts in almost ten days before being cut short by Yemeni authorities. Doubts that existed since about the authorisation of activity were only recently resolved.

William Leijenaar PE1RAH demonstrated his 435/145 MHz linear transponder that is designed to fit in a CubeSat. Various presentations were made including the technicalities and band planning for the new low frequency allocation of 135 kHz.

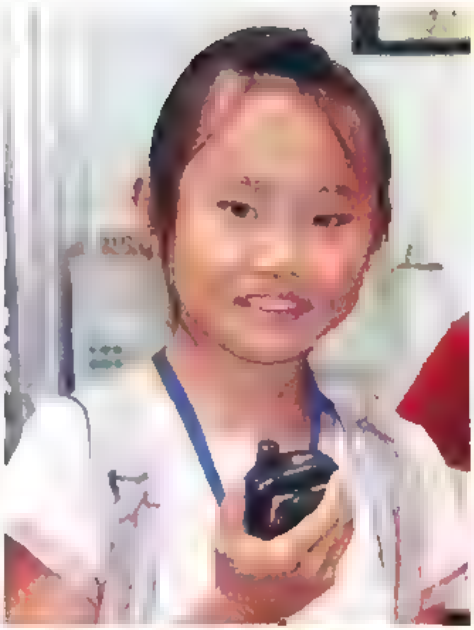
On display was a home-brew LF valve transmitter featuring a 6AG7 crystal oscillator and an 807 amplifier, plus photos of the antenna loading system.

This was an excellent event and social gathering of radio amateurs, including those in Tokyo for the JARL hosted 5th Global Amateur Radio Emergency Conference (GAREC).

More photos appear on the inside back cover of this edition of *Amateur Radio* magazine.

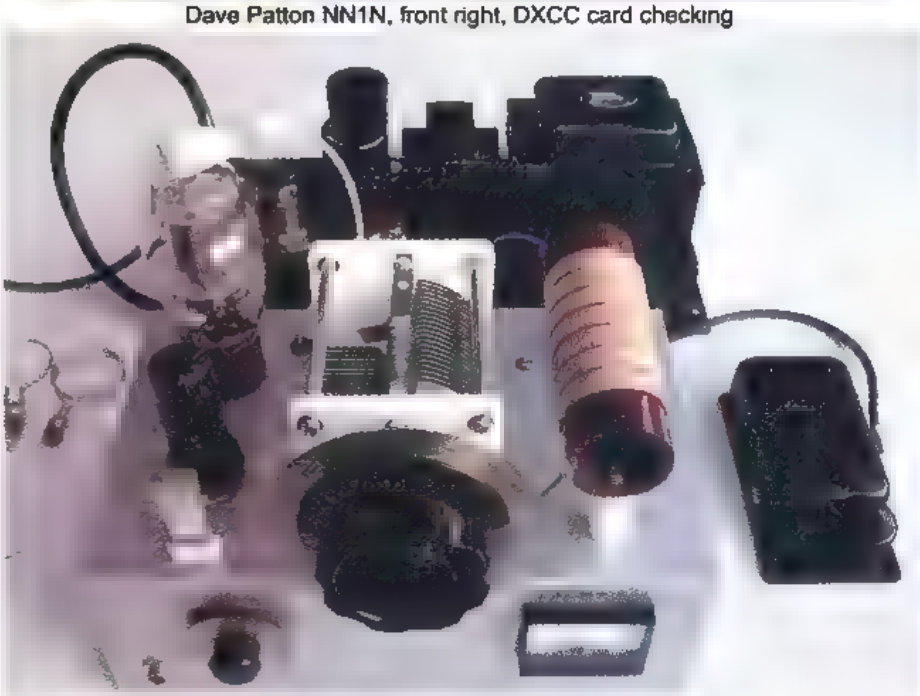
*The author Jim Linton VK3PC was a special guest of the JARL at the Ham Fair in Tokyo – the JARL was the host radio society for GAREC 2009, also held in Tokyo.

ar



At Right: One of the new breed of hams, Naomi JF1XKT, aged eight years and licensed for 12 months is the youngest member of the Japan Ladies Radio Society.

Dave Patton NN1N, front right, DXCC card checking



The 135 kHz transmitter proudly shown by Yoshio Arisaka JA1HQG at the Ham Fair

News from

Tim Mills VK2ZTM
arnews@tpg.com.au

VK2

Mention was made last month that operation was planned from **Mt. Kosciusko** for the **Summer VHF/UHF Field Day** in mid January Dave VK2JDH has sent in details of the planned operation.

"As part of the 100 year anniversary of the WIA in 2010, ARNSW is supporting a number of amateur radio events For this particular event ARNSW is sponsoring the operation and signing the National Parks consent documents and providing a copy of their Public Liability policy.

Dave VK2JDD, Col VK2KCM and Dave VK2JDH are planning to operate from the summit of Mount Kosciusko in the 2010 Summer VHF/UHF Field Day. National Parks are also assisting by providing fee-free consent and logistical support for the operation.

As it is an Alpine Region National Park, there are restrictions on what we can do. Such as no generators, camping locations and transport to the site. The weather during this time of year is still highly variable and can range from mid to high 20 degrees to very windy and below 0.

Power to run the radios at high power is one of the biggest issues. We are currently doing a power budget says Dave VK2JDH and it looks like we will have to supplement the batteries with solar panels to be on air for 18 hours.

They will be operating on 6 m, 2 m, 70 cm and 23 cm. They are hoping to have 10 GHz if they can borrow a station.

Over the weekend NP expects that there will be several hundred people who will make the walk from Charlottes Pass and Thredbo, so we have to ensure that we do not impede access to the summit or spoil others visitors enjoyment" (Mark your calendar 16/17 January 2010 to work the team.)

Also mentioned last month was that the **Radio Expo** will be on in January and I got the date wrong. It should have read Sunday the 24th, not the 17th. Still, a week in Coffs Harbour at that time of year for those who like the holiday format would be most enjoyable. Again mark your calendar to attend the first VK2 field day for the year. Coordinator Gary VK2ZKT advises it will be bigger and better at the same location as in previous years. It is sponsored by the **Mid North Coast Amateur Radio Group.**

While in the summer mood **VK2WI News** will observe the usual break with only a morning transmission on December the 27th and January 3rd and 10th. The first Trash & Treasure at Dural for 2010 is likely to be on Sunday 30 January – a busy month in VK2.

The final scheduled T&T for the year at VK2WI will be at the end of this month, Sunday the 31st November. Perhaps by then there may be access to the 'shed'. During September and into last month the internal fit-out was undertaken.

Mentioned in recent notes was that **Amateur Radio New South Wales** was checking the register of members and contacting those who were unfinancial.

Membership Secretary Norm VK2TOP has advised that there was confusion in the minds of some that ARNSW was not the (former) NSW Division. Some apparently thought that membership of either the National WIA or ARNSW (the NSW Division) provided membership of the other. When the WIA was reorganised, the NSW Division became ARNSW, a State wide club within VK2.

Some of the confusion was that the name – NSW Division – was still being used at intervals. The ARNSW Council has determined to reduce possible confusion by referring to all activities, other than that required for official purposes, as Amateur Radio New South Wales. ARNSW would like amateurs to be members of both bodies. It is particularly important that the National body (WIA) receives the support of as many amateurs as possible.

A big date in the early part of next year will be the **Central Coast Field Day** at Wyong on Sunday the 28th February. On the preceding Saturday evening there will be a dinner co-hosted by ARNSW. Another big date in VK2 will be 11 March, the centenary of that Sydney meeting which created the Wireless Institute.

Some anniversaries of a different kind: It is 40 years since an experimental broadcast was conducted through **VK2WI** at Dural (Sydney) when a live two way interview was conducted with a mobile station driving down Northbourne Avenue, Canberra.

It would be no trouble now with modern technology but in 1969 it was a challenge. To achieve the operation field relay stations were set up at Newnes Junction near Lithgow and on Mt. Ginini west of Canberra. Both then used 'Fred' the Orange repeater to complete the circuit.

During the morning broadcast a two way contact was established with the mobile and several overs conducted. It worked well considering it was all manually switched along the path. It was tried again for the evening broadcast but Murphy took a hand to upset the show.

This time it was a shorter path out to Forbes. Before the broadcast the team at Newnes Junction had been down to the remote transmitters to refuel the generators used for charging the batteries. It was still in the era of valve equipment. There had to be some separation between the transmitters and receivers - all of which were operating on 2 metres in a mixture of both the AM and FM modes.

In the dark someone tripped over the changing cable to a battery and the point of failure was a few seconds into taking the remote signal. The signal just faded out in the VK2WI link receiver and the show was over. It was an interesting exercise.

Another anniversary is in January 2010 when it will be 40 years since the launch of **Australis – Oscar A** which became OSCAR 5 after launch. It was the first amateur radio satellite constructed in Australia by amateur radio members of the University of Melbourne.

They had won the right to produce the satellite against the USA and Germany. It was launched in the USA via a piggy back operation. In Australia arrangements had been made to have telephone circuits to the launch control location, and the proceedings were grafted into a broadcast which originated in Sydney.

Channel 7 at Epping made available an empty studio to anchor the presentation which lasted three hours and was linked out to be transmitted on every available frequency by Sydney amateurs. During quiet times at the launch site, local interviews were conducted and provided program content until something came in from the States.

OSCAR-5 was launched on the 23 January 1970 and was a beacon only, battery-powered system. It was a rectangular package 30 x 43 x 15 cm weighting about 18 kg. It achieved an almost circular orbit at about 1450 km. It had transmitters on 10 metres (29.450) with 250 mW into a half wave dipole.

On 2 metres (144.050) there was 50 mW into a quarter wave rod. It also had a command receiver and rod antenna on 2 metres. It transmitted its HI identification every 52 seconds followed by seven measurements in sequence, being the X, Y and Z axes of its position to the sun. Then followed battery current, voltage and temperature and finally the structure temperature.

It was modulated by a tone centred on 1 kHz which varied +/- to indicate the value of the reading. Its two groups of batteries started at 20 volts and contributed 10 kg of the weight. Internal temperatures were higher than expected which shorten battery life due to increased current consumption.

The 2 metre transmission lasted for about 23 days and 10 kept going for over 40 days. By year's end, over 200 reports had been received from nearly 30 countries.

OSCAR-1 was launched 12 December 1961, OSCAR-2 on 2 June 1962 and OSCAR-3 on 9 March 1965. OSCAR-4 was on 21 December 1965 but the launch vehicle failed to reach orbit. A while back there was renewed Australian amateur interest in OSCARs with the Blue Sat project but I have not seen any recent reports.

73, Tim VK2ZTM. **ar**

Silent Key — Doug Courtney VK2AUC

Doug Courtney's key fell silent on August 22nd 2009. Doug VK2AUC was just short of his 89th birthday.

Born in England Doug migrated with his family when a toddler. He grew up and lived most of his life in the Bomaderry/Nowra area on the south coast of NSW.

Doug saw service with the army in the Middle East and New Guinea during WWII. His training as a signaller no doubt helped when he was attracted to amateur radio in the 1950s. When I met him in 1961, he was already a regular operator on the slow Morse net with sessions on at least one night per week. Doug kept with the net for many years. To me Doug's shack was an example of real 'amateur radio'. His equipment was a mix of converted wartime and home-made units all very neatly set out. Although he did go AM and experimented with NBFM, his great love was CW Doug spent the last few years working mainly a small group of comrades with QRP CW. Failing health kept him off the air since the beginning of this year.

Doug's wife also passed away after a long illness only a few months ago. He is survived by two of his three daughters and of course grandchildren.

Doug was also a gifted artist and sign writer. He joined the local model flying club, served as president and flew radio control. However his greatest skill was in making miniature static models of ships, 'planes and scenery to great detail. He eschewed regular kits, preferring to use 'bits and pieces' from the scrap bin. One diorama of a desert gun emplacement (from memory?) had one seventy second scale barbed wire!!!

Brian Wilson

OTY:

DV in contests

A discussion during a recent EMDRC D-STAR net on the use of digital voice modes in contests leads me to write.

Looking at the rules for several contests shows that where voice modes are allowed, this is usually restricted to AM, SSB and/or FM modulation modes.

With the current arrangement of each contest having its own organiser who controls the rules for that contest, it would seem rather inefficient to start multiple parallel discussions with each contest organiser. Rather, your column is an ideal means to communicate to all contest organisers and the general amateur community at the same time.

I would like to see all contests that are open to contacts made via AM, SSB and/or FM to also allow digital voice modulation contacts to be accepted.

I am deliberately using the generic "digital voice modulation" and not specifically D-STAR digital voice. With the increasing demands on the limited spectrum space available to amateurs, I expect an increasing use of digital modulation modes across all bands as these modes allow for narrower bandwidths, and hence closer channel spacings. This will lead to an increasing number of digital technique technologies to transfer the information about.

I am talking about the uses of digital modulation techniques where voice is encoded. While it is possible to transfer text, pictures and other information digitally, several of the existing digital data modes are already accepted in various contests (although I would like to see these also accept new digital data protocols as they are developed).

I feel that the inclusion of digital voice modulation modes into contests would help boost the interest in these technologies and increase the number of stations that have (home made or commercial) equipment capable of transmitting and receiving them.

I propose that all contest organisers review their rules and expand the range of voice modulation modes to include digital technologies. I would like to see this considered this from the default point of view of 'inclusion' with any subsequent arguments being as to why they are *not* appropriate, rather than the reverse.

Of course I am talking about keeping the same simplex RF contact rules as used in most contests already. (I am aware that there is a new international D-STAR contest, which will have been run for the first time by the time this appears, which allows the use of repeaters. However, even that contest excludes reflectors, dongles and other non-RF contacts).

I propose that all contest organisers review their rules and expand the range of voice modulation modes to include digital technologies.

If the contest allows for multiple contacts within a period of time using multiple modes, then digital voice (either as a single mode or several depending on the technologies used) can be added as another mode to encourage its use to obtain a higher score.

I believe there are few contests (if any) where signal readability is included in the scoring. Digital modulation techniques are "all or nothing" in terms of their reception - either you get a clear voice signal or you get nothing. So, I accept that these contests would need to exclude readability as a factor in the scoring. However, signal strength is still very much a factor that could continue to be used where this is measurable by the receiver.

With broadcast radio and television signals all "going digital" (and for all the same reasons), I can see that digital modulation will become more common in the future (whatever it is or is called) just as AM and FM became more common after their introduction, compared to CW. The older modes will still be used but by opening up contests to the new technologies we can provide encouragement to their wide-spread adoption and development.

I would encourage a wide-spread debate on this topic within the amateur community, with contest organisers responding quickly to the inclusion of the new modulation modes as they are developed. In particular, I would encourage those with D-STAR capable equipment to participate in the EMDRC D-STAR nets, run on Thursday evenings at 2000 EST on port C of all WIA D-STAR repeaters and Reflector 3 port C, to contribute their comments and ideas on this subject.

Again, I would stress that this discussion is about the inclusion of ALL digital voice modulation modes, of which D-STAR Digital Voice is but one example.

Susan Mackay VK3ANZ

OTY: J-pole Sept 2009

Ross, I read with interest your article on the J-pole in September 2009 AR.

Some months ago I built a very similar 2-metre Slim Jim using 300 ohm ribbon. I tuned it for very low SWR at the frequency of interest, using a VK5JST 1-500 MHz Aerial Analyser.

When I then slid the Slim Jim inside a length of 16 mm ID PVC tubing I found that the SWR and tuning had changed considerably. Further experimenting showed that even with the PVC tube beside the Slim Jim the tuning varied with distance from the PVC tube. It was also noted that a 12 mm wide length of very dry quad wooden moulding held near the antenna significantly affected it. I now use the antenna with the PVC tube serving only as an end support and the Slim Jim hanging well clear.

For fine tuning of the antenna I find that a 60 mm length of U-shaped black plastic (as used for hanging posters) can be slid along the 300 ohm ribbon to obtain the best match, and then glued in position.

With regards,

Garth Jenkinson VK3BBK

Greetings Garth,

Thank you for your observations on the J-Pole antenna.

I have not come across this problem, probably as I usually tune the antenna on the broom handle. I note that the correctly tuned point is sometimes different from the calculated point. I have not had the problem of detuning with the PVC pipe cover but this would of course depend on the type and grade of pipe being used.

Your experiences may have answered the reason why the tuning point is sometimes different from the calculated. Again I thank you for your interest in the article

Regards, Ross VK3CE

VK5

AHARS

John Elliott VK5EMI, President

September was a big month for AHARS: our big Buy and Sell (Hamfest); the Clubs' Convention; and the visit by WIA executives Michael Owen VK3KI and Robert Broomhead VK3DN

Clubs' Convention

The WIA All Clubs' Convention, organised by Paul Hoffmann VK5PH, went very well, with good attendance, and with many important topics for discussion. The knowledge and guidance of Michael and Robert added greatly to the success of that event. AHARS was well represented at the conference, with some presentations by our representatives.

Annual Buy and Sell

The following day was our annual Buy and Sell event. Guests of Honour were again Michael and Robert.

The opening address by Michael, and the presentations by Charlie VK5KDK and Ben VK5BB on squid poles, followed later by Michael VK5ZEA on his home-brew D-STAR repeater (now in use at Port Lincoln), were well-attended and much appreciated by all who attended.

On the battle front, we had 32 tables selling the usual mixture of old and new to bargain hungry amateurs.

The WIA table did a good trade, selling books from the WIA Book Shop, and signing up a good number of members for our representative body. Thanks also to Trevor VK5ATQ and Peter VK5APR for assisting on the table, their good looks and charming personalities aiding our WIA national representatives significantly, I believe.

Excellent service to attendees was provided by our ALARA ladies manning the ALARA coffee lounge The President of ALARA, Tina VK5TMC, circulated amongst the buyers and sellers with a tray of food and drink, just like in the old time cinemas. It was a much-appreciated touch, especially by the vendors, who often could not leave their stalls. Outside, the NERC boys put on the usual quality Aussie BBQ, so all possible tastes were attended to.

Next year we intend to run a few workshops at the event. We thank all of those who attended, including those commercial vendors who often come from afar, and at some financial risk. I personally thank the AHARS committee and members who all contributed greatly to this most important event in the VK5 AR scene.

September Meeting Talk

Tony Hughes VK5KAT talked on the designing of high-power transmitting stations, focussing particularly on giant antenna arrays, their construction and the phasing of elements for best coverage.

October Meeting

This will already be gone by now, but will have been another club construction night, hosted by our Construction King, Graham VK5ZFZ.

November Meeting

Justin Giles-Clark VK7TW will give a talk on his Optical Communications work.

Our regular contributor, Christine Taylor VK5CTY has been away on a whirlwind tour of northern Europe, her travels involving some major amateur radio events. You will hear about them from the ALARA News.

Michael Owen, Peter Reichelt, and Trevor Quick made good sales at the WIA table.

(Back row from left): ALARA members Bia Nero-Palladij, Joy Robins, Shirley Tregellas VK5YL, Jean Kopp VK5TSX and Jenny Wardrop VK5ANW, (front row from left), Jenny VK5FJAY, Sharron May ZL3AE, Tina Clogg VK5TMC, Marilyn Syme VK3DMS, Pat VK3OZ and Lesley Smit VK5LOL help out at the Adelaide Hills Amateur Radio Society's buy and sell The AHARS buy-and-sell is fast becoming a popular destination in Adelaide for those interested in buying radio gear

HF holiday: working from A35-Tonga

Stephen Warrillow VK3SN

While the South-Pacific is very close to VK land, relatively few Australians have visited the myriad of islands that dot this wide blue expanse.

I had previously spent time in Samoa as part of earlier medical training and enjoyed that experience and subsequent visits immensely. When the time came to escape the chilly VK3 winter for a short break, I considered various options, but settled on Tonga, also known as 'The Friendly Islands'. Refer Photo 1.

It is also referred to as 'the place where time begins', as a sharp kink in the International Date Line places it thirteen hours ahead of GMT, making it the first nation to greet every new day. Tonga is the only Kingdom in the south Pacific and also the only Pacific island nation never to have been externally governed as part of a colonial empire. It is made up of 176 islands, only 36 of which are inhabited.

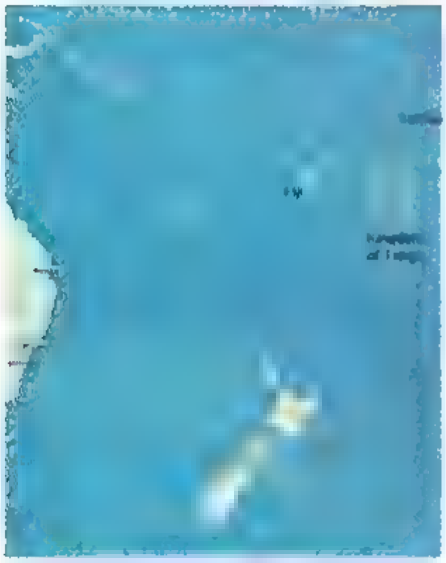


Photo 1: Tonga – and its position in the south Pacific.

Even on the populated islands, 24 are car free and mains electricity is not at all universally available. Most Tongans live a very traditional Polynesian lifestyle based around subsistence farming and fishing, with a strong emphasis on the importance of culture, family and their local church.

Once the decision to visit Tonga for our family holiday had been made, my mind next turned to the logistics of working HF radio from A35. Initial enquiries about obtaining a Tongan license were not very successful. Searching on the internet led me to contact the Amateur Radio Club of Tonga for advice, but sadly it turns out that the club no longer operates (according to correspondence from its former secretary, Manfred A35MS).

Fortunately, a broader search enabled me to contact Bob ZL1RS, who had worked from A35 recently and was extremely helpful. On Bob's advice, I made contact with the Department of Communications in the Prime Minister's Office and discovered the necessary steps. Using a combination of snail mail and email, I paid the small fee and received my call sign allocation – A35AB. Now it was just a matter of figuring out what to take...

I suspect that most amateurs are familiar with the following balancing act. I was going on a family holiday, not a full-on DXpedition, so there was clearly a limit on what I could reasonably take with me. At the same time, whatever I did take needed to provide decent capabilities (to make the effort worthwhile) and be robust enough to cope with airline baggage handlers as well as tropical weather conditions. Fortunately, modern technology and innovation has greatly helped the modern amateur in these respects and there is a fair bit of gear now available to meet most of these requirements.

Photo 2: The equipment chosen for the visit to A35.

My FT-100D transceiver had not seen much action since I used it while living in the UK in 2002, and has now been superseded, but it remains a very capable 'all-band/all-mode' ultra-compact 100 W transceiver, so it went in to the bag.

What I really wanted to avoid was taking my super-heavy 25 A power supply (all the airlines now seem to take baggage weight limits *very* seriously!). Fortunately, there are plenty of inexpensive, small, lightweight, switch-mode supplies now available and the Manson SPA-8230 looked ideal.

Trying to work multiple HF bands from a single antenna while portable and not using a tuner (too much extra weight and bulk) is potentially a tricky business, but I have used a Bushcomm SWC multi-band dipole for a while at the home QTH and thought it would be a good option for portable work. The antenna is pretty rugged and covers 80 m through to 10 m, achieving a pretty reasonable SWR without the aid of a tuner.

After ordering the kit on-line and assembling the components one night, I coiled the dipole onto an old coax reel along with 25 metres of RG-58 terminated with PL-259s. Finally, I was not sure where I would be setting up, so I packed a long mains extension lead so that I could reach mains power wherever it was available. All up, the kit seemed pretty compact and did not end up blowing the baggage allowance. Refer Photo 2. I also made sure to take electricians tape, poly-cord, spare fuses and a Leatherman multi-tool to deal with basic repairs.

We departed on Friday 26th June at midday, pleased to be leaving cold, grey Melbourne. After a stopover in Auckland we flew north and arrived on the main island of Tongatapu in the early hours of Saturday morning. Getting from the airport to the capital Nuku'alofa was

easy and we were pleased to fall into bed at the hotel.

It was not so easy getting up a few hours later, but the excitement of exploring our new surroundings helped. After breakfast, we wandered in to the national capital and enjoyed an easy walking tour of all the major sites as well as visiting markets and other cultural centres.

We soon settled in to the 'Tongan-time' psyche and adjusted to the fact that there really was no need to hurry anything that day. The following day was Sunday, which in Tonga pretty much means the only activities permitted are church attendance and eating a massive lunch with family.

In essence, the whole nation closes for the day, but we found a full-day tour that would take us to all the important sites on the main island (including spectacular blowholes, ancient chiefly tombs, Cook's landing point and a huge Stonehenge like structure) and found time for a lazy swim in the afternoon. While I had not yet unpacked any of the radio gear, we had had a great time so far.

On Monday morning we had an early start. After packing up, we left our hotel and walked over to the wharf where we located the boat that would take us to 'Atata Island. This small island is home to a little fishing village and also accommodates visitors at a basic resort.

As the island approached, we really began to appreciate the skill of the crew who needed to negotiate narrow channels through the coral reef. We made it safely through to the small jetty and were warmly welcomed by our hosts and shown to our accommodation.

After we had settled in to our small bungalow, I wandered around to check out options for getting the antenna up. There were certainly plenty of coconut palms and other trees about - a few too many, in fact. The dipole was nearly 50 m in total length and there was no way I could find a straight clear run of this distance, even right near the beach. After a while I decided it would be far easier to run the dipole in an inverted-V configuration. This would reduce the amount of space required to set it up as well as allowing me to more easily place the wire over the surrounding lush tropical vegetation.

I tied a heavy shell found on the beach to my poly-cord and after a few attempts, managed to throw it over the tall coconut palm I had selected to support the centre-feed point. My initial attempts caused much amusement amongst several local on-lookers who obligingly retrieved the line on the many occasions when I missed. I unwound the dipole and coax and tied the balun on to the poly-cord prior to hoisting the lot about 10 metres up into the air.

The next, and more difficult part, was getting each limb of the dipole out above surrounding trees to the necessary distance. After a bit of trial and error, the best solution was to repeatedly toss a shell-weighted length of poly-cord over the dense trees using a 'leap-frog' approach, until I had a good run lying over these obstacles.

In the end, while it was not possible to get the antenna perfectly symmetrical, I was satisfied that it looked good enough. Before I could unpack and set up the transceiver though, the rest of my family decided that radio was definitely not the main reason for us being on a tropical coral island.

Out-voted by my family, I agreed that we should really go for a snorkel. This proved to be a good move. Our hosts took us out on their boat to a nearby part of the reef and we spent several hours enjoying the amazing spectacle of untouched coral reef and its abundant marine life. I had to admit, this was a good reason to delay pulling out the rig!

Setting up the radio was straight forward enough and all was going well until I noticed that the hand-microphone lead had been damaged. Somehow during transport, the lead had been almost severed, close to the microphone end. Fortunately, none of the delicate wiring seemed injured and an easy repair was made with electrical tape. Once this was sorted, I checked all the connections and turned on the power and waited anxiously.

The familiar blue glow of the FT-100D display came on and I was relieved. Better still,

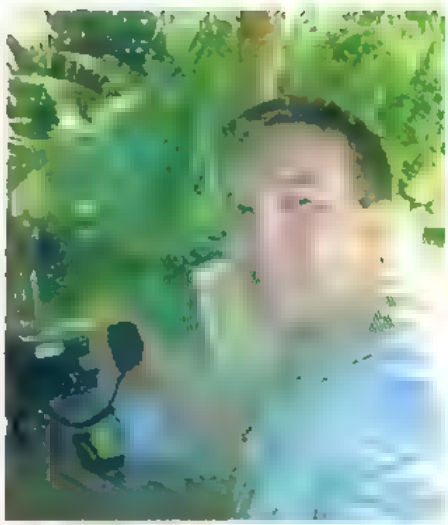


Photo 3 The author, Stephen A35AB/ VK3SN, at the microphone

Photo 5: The inverted vee dipole in the air on Fafa Island -- very 'low key'.

Photo 4: Untangling the dipole on Fafa Island.

the internal SWR meter indicated very acceptable readings on all of the HF bands and the microphone even worked. It was mid-afternoon, so I dialled across the 20 m band. Lo and behold, there were several stations coming in loud and clear from stateside, ZL and VK.

This was great! I put out a call and was immediately rewarded. Not only did the contact go well, but I was kindly placed on the DX-cluster. Even the more difficult to impress members of the family now had to admit that this was pretty cool, as a very modest pile-up then ensued. Refer Photo 3.

Over several hours, I made a heap of contacts on 20 and 40 metres and felt pleased that the efforts in getting to this point had been worthwhile. Eventually, the bands became more subdued. Just in time to watch a spectacular island sunset and enjoy a fabulous Polynesian sea-food dinner.

The next several days worked in a similar vein. After a morning swim or play on sea-kayaks, we would go snorkelling after lunch and then I would get on the air while everyone else had an afternoon siesta. Not a bad deal!

Some of the memorable island sights included watching the local fishermen heading off early each morning to see what their nets had caught and observing pigs hunting shellfish at low tide. On the second night we endured a moderate electrical storm, with strong winds. Despite my concerns about the dipole in these conditions, the antenna stood up well to the elements.

After three nights on 'Atata, we packed up again and boated over to Fafa Island. If 'Atata was small, then Fafa was tiny. The island could be walked across in little over ten minutes, without hurrying.

Getting across the reef was quite an adventure, as we went over at low tide. There were several ominous scraping and grinding sounds at various points and at one stage we figured that there was a very good chance we would be getting more than just our feet wet.

Never the less, we did make it through and were greeted by a glorious paradise. The beauty of a south-pacific island and coral reef in perfect sunshine is hard to convey in words, other than it was 'post-card' perfect.

We settled in to our new accommodation and I reconnoitred the beach for antenna placement opportunities. As on 'Atata, our Fafa hosts had absolutely no objections to having a dipole antenna set up and there were plenty of trees (they recalled previous visitors calling themselves 'hams', who had set up all sorts of weird bits of equipment on the northern tip of the island near the beach, so they did sort of understand what I was proposing).

After much consideration, I ended up going with a very similar configuration to the previous set-up. Refer Photo 4. Once again, I used a weighted poly-cord thrown into a coconut palm as the centre point and made up an inverted-V. So elegant was the arrangement that my wife commented on the low visual impact of the antenna and coax feed. Such unsolicited praise is to be cherished indeed! Refer Photo 5.

I was able to set up the radio and power supply on a wooden table on a sea view deck at the rear of our bungalow – perfect. Once again, the radio worked well and many contacts were made on the lower HF bands. I was amazed at the low noise levels encountered and received pretty favourable signal reports from most stations I worked.

Even those stations who found my signal strength quite low were kind enough to patiently persevere in order to complete a successful contact. I also found that the tiny earphones from my MP3 player worked perfectly well in the back of the radio and this spared others from having to hear all the HF crackle and hiss.

After a few hours, I put radio pursuits on hold and we boated out to an uninhabited island for an afternoon visit that lasted several hours.

The beach and reef here were the best we saw – simply stunning. Only the necessity of catching the favourable tide to cross back over the reef forced us back to Fafa.

Over the next three days, the overall rhythm of activity was much the same: lots of walking along the beach, exploration of the tropical forest and swimming out with snorkels over the reef. One night, the locals put on some island style entertainment with kava drinking, traditional dances and singing – we were most impressed.

Mid-afternoon each day, there was ample opportunity to fire up the rig and try the HF bands. Many contacts were made and it was great to be considered slightly novel and even a little bit 'in demand' by other stations.

Unfortunately, all good things must end and we did eventually need to return home. I packed up the portable gear (took roughly 40 minutes) and we boated back to Nuku'alofa for the night prior to flying home on Monday 6th July. The trip had been fantastic and the whole family felt extremely refreshed.

Taking the radio gear ended up being pretty straightforward and worked better than I had anticipated. I had a lot of fun working from somewhere a little unusual and was glad to hear the enthusiastic encouragement expressed during so many of the QSOs.

Would I do things differently next time?

There is not much I would change, except taking a Morse key. Like many amateur operators who learned Morse long ago to upgrade their licence, I have hardly used CW. This is a shame, because it wastes a hard earned skill and neglects a mode that is so ideally suited to low power and portable work. Given these factors, I have resolved to get my Morse 'up to speed' again and will be taking a key on the next sojourn.

Overall, I can strongly recommend taking the sort of gear I carried on this trip. Certainly a bit more fuss than just throwing in the hand-held, but definitely worth it! Now, to plan for the next trip.....

Stephen VK3SN is a member of the North East Radio Group (NERG) and enjoys working portable, especially in remote or inaccessible places.

For further reading about Tonga, try the 'Lonely Planet guide to the Samoan Islands and Tonga' (Lonely Planet Publications, 2006) and

'Making Sense of Tonga' by Mary McCoy and Siotame Havea (Training Group of the South Pacific, 2006).

Do you have a DX story?

Or an IOTA story?

Or an amateur radio project or adventure that you can share with others?

In the first place, contact the editor

editor-armag@wia.org.au

Catherine VK4VCH leads the Queensland trifecta in 29th ALARA contest

The results of the 29th ALARA contest are out and it is the YLs from Queensland who have bagged the top three spots. It was a wonderful year for the contest as 28 logs in all were registered. Contesting is a great time for the YLs to meet each other on air, make new friends and encourage the hobby.

Keen contester Catherine VK4VCH emerged the overall winner improving her standing from third place in last year's contest. Fellow Queenslanders and VK non-member Diane VK4YL followed close behind at second place and Pam VK4PTO was at number three.

Victorian Jean VK3VIP came close to the Queenslanders' sweep of the ALARA contest with a brave effort of 1384. Meanwhile, Pat VK3OZ continued her reign this year as our top VK CW YL. Leonie VK2FHRK is the top Foundation licensee for the second year in a row.

Sharron ZL3AE was the top DXer and top ZL ALARA member. Gerald VK2HBG is the top VK OM for the fourth year in a row. ALARA is now thinking of issuing a special certificate for the top OM in each VK area to appreciate their efforts in coming on air and giving contacts to the girls.

A full table of the results appears in the contests column on page 42

100 Years

With the WIA celebrating its 100th anniversary coming up next year and ALARA hoping to use the special callsign VK100WIA, contesters in 2010 will have a chance to get some extra points and win some rather special certificates to decorate the shack with.

YL Dot Bishop VK2DB took the ALARA table to the annual Blue Mountains Amateur Radio Club Winterfest 2009 and made local headlines.

The Hornsby Advocate featured Dot and her OM John VK2ZOI in an article popularizing the amateur radio as a hobby that brings people – and sometimes, families – together. In Dot's case, her OM and three of her four children are active amateurs.

Not one to give up, she tells us that she is working on her eldest son through her six-year-old granddaughter Her other son, Ben VK2FBRB, has just acquired his Foundation licence and has just bought his first transceiver He is fast becoming a satellite chaser and has his ears glued, listening to ISS.

The group shot of the ALARA helpers at the AHARS Buy and Sell appears in the AHARS column on page 33.

YL Dot Bishop VK2DB staffed the ALARA table in the annual Blue Mountains Amateur Radio Club Winterfest 2009. Here she draws the door prize.

YL Dot Bishop VK2DB and her OM John VK2ZOI busy piling up QSOs at their radio shack. Photo by Ben VK2FBRB.

YLs (back row from left to right) Jillian VK2FAOK, Yvonne VK4FLUV, Diana VK4PTA, Daphne VK4IA, Brenda VK4FBJP, and Sheralyn VK2LUV; (Front row from left to right) Catherine VK4VCH, Marisa VK4FMAR, Pam VK4PTO, Susan VK7LUV and Kirralee Brain **celebrate ALARA's 34th birthday at** Gold Coast. Daphne cut the birthday cake and Susan and family who were visiting joined the celebrations that included live entertainers and plenty of fun.

DX - NEWS & VIEWS.

John Bazley VK4OQ
E-Mail: john bazley@bigpond.com

Well we certainly have had a spell of large DXpeditions in recent weeks from some really rare spots.

By the time you read this we will have had **Glorioso Islands FT5GA, Midway Islands KH4D and Conway Reef 3D2/C** At the time of writing the **Conway Reef Team** has arrived safely on the Island and has not been affected by the earthquake ENE of Tonga and the following tsunami.

TX3A will be active from **Chesterfield Islands** from November 23rd to December 6th 2009. This is another DXpedition by AA7JV and HA7RY with a strong low-band focus. Their priorities will be 160, 80 and 40 metres, in that order. They will be active on the higher bands the rest of the time. Please note that the actual dates of operation may change due to weather and other variables. They will provide updates as we get closer to the operation. The callsign TX3A is licensed for only 14 days of operation. Should they arrive earlier or leave later that the dates licensed, they will then operate as FK/AA7JV or FK/HA7RY.

I am sure readers will remember that this is the same team that had such appalling weather getting to Mellish Reef, so let us hope that they have calmer seas this time!

AA7JV and HA7RY

For the antenna 'buffs', they will use the same antenna that was used so successfully on Mellish Reef VK9GMW. Details are available at http://vk9gmw.com/documents/VK9GMW_ANTENNA.pdf

In addition they have developed a new RX antenna that they hope will improve their RX capabilities.

Late update: As weather is the main variable, AA7JV and HA7RY will be standing-by in Gladstone (Queensland) from 28 October, ready to sail whenever they see a weather break, long enough to get them to Chesterfield (the voyage will take 60-70 hours). Therefore they do not have a fixed date for the start of operations, they could be on the air on November 4th!

Eric F6ICX is heading back to **Madagascar** and plans to be QRV again as 5R8IC. He will be operating from **Saint Marie Island (AF-090)** from November 17th to December 15th. Look for him on 3.5 through 28 MHz. QSL via F6ICX.

4W6FR: Chris VK4FR continues to be active as his work permits from **Dili.** Activity has been mostly on 30, 20 and 17 using PSK31 and Olivia. QSL requests should go to VK4FW.

Mikhail RW3AJX is now on a two to three year work assignment in **Zimbabwe**. He has recently been licensed as Z23MS and he has been QRV on 20 SSB. QSL via UA3DX.

Wayne Rogers ZP5/W5KDJ will be in **Paraguay** operating CW and RTTY, 160-6 m, November 22-December 1.

German ops Harry DM5TI, Tom DL2RMC, Rene DL2JRM and Sid DM2AYO are heading to **Christmas Island (VK9).** The team plans to be there between November 21st and December 5th. Plans are to have two similar stations (K3, THP HL1.1) running them 24/7 on all modes on 1.8 through 28 MHz. They will be focusing on the low bands, mostly on CW. Harry says they will not spare any effort to erect good antennas as they will be using verticals on 160 through 30 metres and a 2 element Moxon beam at 12 metres (40 feet) for activity on 20 through 10 metres. They have applied for their callsigns and are expecting to use VK9XX during the DXpedition and VK9XW for the CQ World Wide CW DX Contest. They also plan to have a Website with an online log search.

Alex GM0DHZ/AA8YH expects to be back in **Tunisia** for five weeks starting November 16th. Listen for him to be operating on CW from the 3V8SS station on weekends. QRP ops can set up skeds with Alex by sending an email to his QRZ.COM email address.

After two years of silence from ZB2X Finnish op Jorma OH2KI tells us he is heading back to **Gibraltar** in November for the CQ World Wide CW DX Contest. Exact category has not yet been decided. It will depend on the possibilities of where to put the antennas up at the crowded QTH, says Jorma.

Col MM0NDX of DX World of Ham Radio, reports that Laci HA0NAR is heading to western Africa early next year. First he will be in **Senegal** from January 27th to February 10th and plans to be QRV as 6W/HA0NAR. Then from February 11th to 21st he will be operating as J5NAR from **Guinea-Bissau**. While in each country he plans to take side trips to **IOTAs AF-078 (Senegal South Group) and AF-093 (Guinea-Bissau Coastal Region Group).**

YN2GY in **Nicaragua** will be on for the CQWW CW with Eric K9GY operating. He prefers that you get your QSL credit on LoTW but if necessary, send direct via K9GY. He will be operating at YN2N's QTH near **Granada**. Eric's inclusive operating dates are November 26-29. He travels on the 26th and 30th. Eric has some good benchmarks to work with, K9ZO's 8th place single op all band low power in 2008 and K9NW's third place in 2007, from the same QTH. He plans to focus on CW on 30, 17 and 12 m before and after the contest for those looking for Nicaragua on those bands.

An international team is heading to

SPOTLIGHT ON SWLing

Robin Harwood VK7RH
vk7rh@wia org.au

Radio St Helena

I have been informed that Radio St. Helena will be again making a special broadcast on November 14th from 2000 until 0130 on the 15th.

The transmission will be on 11092.5 USB on a former frequency that was the mainstay for external communications. The original sender is now in a museum on the island but I am not sure if this is the sender being utilised.

Some DXers did donate a log periodic beam which is used for the different regions. The South Pacific seems to miss out although they tried unsuccessfully to beam to NZ at an earlier attempt.

This event will be on early Sunday morning and I have yet to hear this station direct due to extremely poor propagation yet have been fortunate to do so using several remote sites on the Internet.

It is not the same as hearing it on your own receivers although it is much clearer.

China

There was a noticeable increase in transmissions from China leading up to and including the 60th Anniversary celebrations in Beijing on October 1st.

The Chinese at the same time dramatically increased their jamming of external stations broadcasting into the PRC. There is also an apparent OTHR signal which can easily be observed during our local evening hours over a wide swathe of frequencies from 5.7 to 5.9 and 6.7 up to 7.0 MHz and it often strays into the lowers segments of 40 metres.

There has been speculation that it may be located on Hainan Island in the Gulf of Tonkin.

Incidentally a new station appeared early in September, calling itself the "Voice of Beibu Bay". This is what the Chinese call the Gulf of Tonkin. This too is believed to be on Hainan. Programming is in Indonesian, Vietnamese, various Chinese dialects and Tagalog.

I have heard English ID announcements but no programming yet in that language. It is on 5050 and 9940 from 1000 to 1400 and again from 2000 till 2300. 9940 has interference from another broadcaster in Chinese at the same times but I am unable to positively identify who it is and 5050 is in the clear.

Radio Australia

Radio Australia is celebrating its 70th birthday next month and there will be special programming throughout December to commemorate this occasion.

It commenced early in December 1939 from Melbourne and these days it mainly relays Radio National. I believe that they may be commencing programming in Burmese. The only foreign languages I have recently heard from RA are Indonesian, Indigenous Pacific Island dialects and Standard Chinese.

Ecuador

HCJB did close down their Pifo senders on 30th September. I believe 6050 remains on in local indigenous languages but it is unclear whether this is from Ecuador. Test broadcasts were made from Chile and possibly from French Guiana

Well that is all for this month. Until next month, all the best in monitoring.

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Samoa (5W), Tonga (A3) and South Cooks (E5) between mid November and mid December. The team includes Andrea IK1PMR, Claudia K2LEO/PA3LEO, Wil PA0BWL, Joe AA4NN, Franz OE2SNL, Gerhard DJ5IW and Kenneth OZ1IKY. First stop Samoa between November 10th and 17th. Next will be Tonga from November 18th to December 1st and then Rarotonga, South Cooks, starting around December 2nd to 5th for one week. Plans are to have two stations QRV with amps for activity on 1.8 through 28 MHz. Callsigns have not yet been finalized. Andrea has a Web page with more details at http://www.ik1pmr.com/plans/a3/

Robert S53R has just arrived in **Khartoum, Sudan**, but his radio and amp were, at last report, still on the way from Slovenia. He will try to get on the air as soon as he can, hoping for the callsign ST2X. Paperwork is in process. Robert thinks he will soon be able to use the log periodic on the roof of his office building that is at about 25 m off the ground and no one has been using it. It should be pretty effective. At his residence he will have an 80-10 m full size vertical, hoping to be QRV by the end of September. For those who need CQ Zone 34, this should be your chance.

Jim ET3JD in **Ethiopia** is close to being on the air. He says in Ethiopia the main emphasis is on licensing the equipment rather than the operator, and thinks he will have that all worked out by early October. Jim has set up a web site to keep us apprised of his progress: http://www.deloach.net/ET3JD.html Jim and his wife have been in Addis Ababa for two months now and are settling in well, he says. Shipping restrictions have prevented him taking in a big beam, but he plans to get creative with wire antennas He has been in touch with the Ethiopian Amateur Radio Association, EARS, and plans to be very active from the ET3AA club station, led by ET3SID. He will be on PSK31, SSB, CW and "maybe some RTTY for contests," from 40-15 m. He plans to focus on 30 and 17 m.

FK/JA1NLX expects to be QRV November 19-24 from **Ouvea Island** in the **Loyalty Islands, New Caledonia**. This is **IOTA OC-033**. He plans to be on 80, 40, 30, 20, 17, 15, 12 and 10 m CW and RTTY. Keeping his gear less than 50 pounds (23 kg), he will have an IC-706MKII and 4 m long portable antenna. QSL to JA1NLX via the bureau or LoTW or direct with an SASE. He will make an on-line log available when he gets home to Japan.

Good luck in the pile-ups until next month.

Special thanks to the authors of The Daily DX (W3UR), 425 DX News (I1JQJ) and QRZ.DX for information appearing in this month's DX News & Views. For interested readers you can obtain from W3UR a free two-week trial of The Daily DX from www.dailydx.com/trial.htm

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VK7 moves closer to VK0

Roger Nichols VK7ARN

THANKS TO THE VK7 CLUBS and several individuals, VK7 is reasonably well serviced by amateur repeaters. The linked VK7RAD and VK7RHT provide the primary cover in the south east of Tasmania.

However, as Tasmania is a a rather bumpy island, the repeater coverage has some holes in it.

One of these holes was the Huon Valley and lower D'Entrecateaux Channel (between Bruny Island and the 'big' island. We will ignore the other 'big' island further north).

This hole has now been filled by the addition of VK7RBI which, for practical purposes, is a simplex link into the RHT RAD system on 147.300 MHz with an access tone of 114.8 Hz.

Located on the western side of South Bruny Island, the system relies on propagation over salt water and provides cover into much of the Huon Valley and as far south as Cockle Creek.

So, what has this to do with the 'Apple Isle' moving closer to the very big (and very cold) island to the south? Well, Cockle Creek is as far south as you can drive in Australia.

VK7RBI has been established by members of WICEN Tasmania (South) in conjunction with the Radio and Electronics Association of Southern Tasmania (REAST).

Their next project is a very long Yagi to extend the cover into VK0, Hi.

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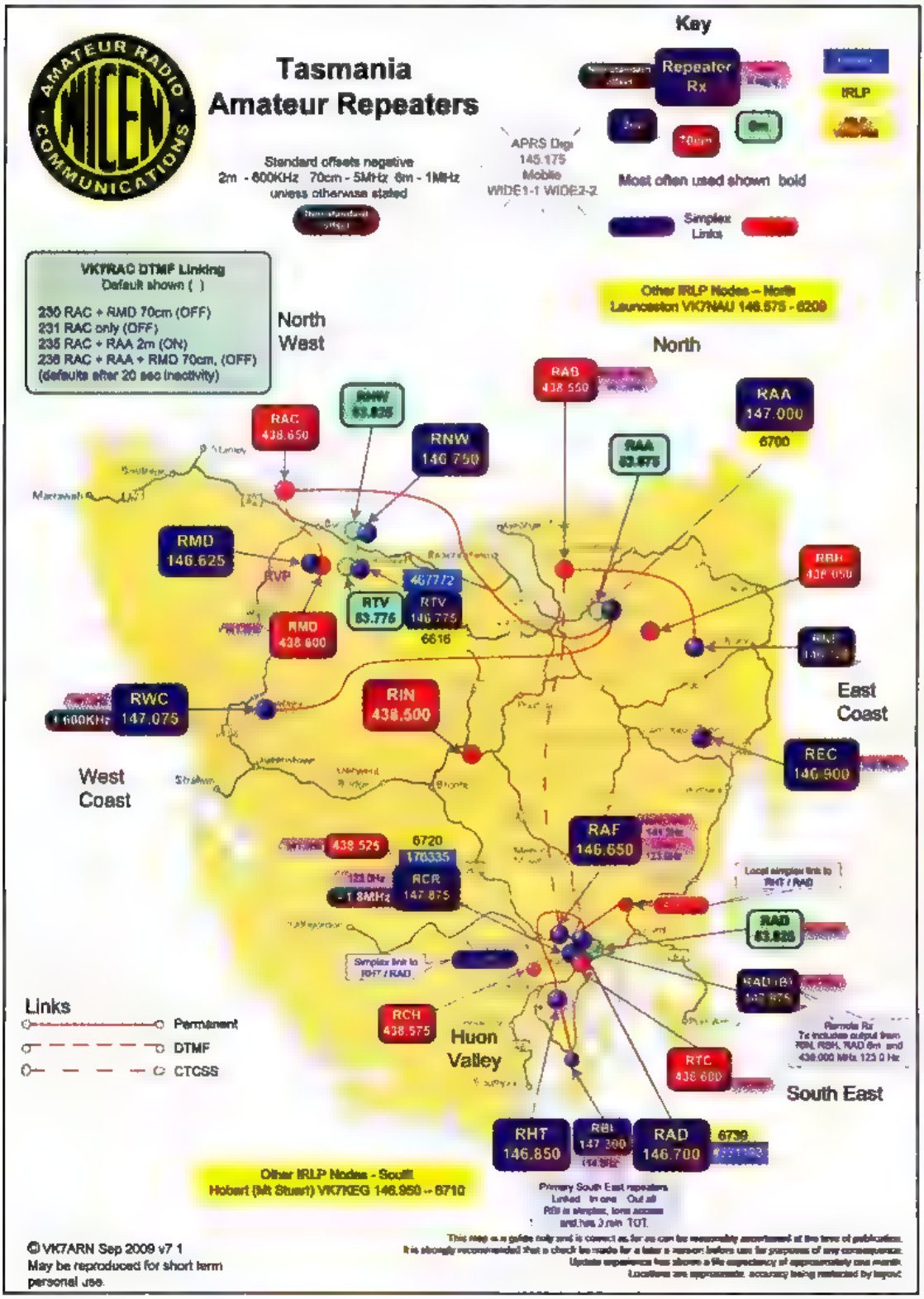

A map showing amateur radio repeaters in Tasmania.

Contests

Craig Edwards VK8PDX (ex VK5HRT)
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Contest Calendar for November— December 2009

November	**7/8**	**Ukrainian DX Contest**	**SSB/CW**
	8	**Straight Key Weekend Sprintathon**	**CW**
	14/15	**Worked All Europe**	**RTTY**
	14/15	**Japan International DX Contest**	**SSB**
	14/15	**OK-OM Contest**	**CW**
	21/22	**Bulgarian DX Contest**	**SSB/CW**
	28/29	**CQWW DX Contest**	**CW**
	28/29	**Spring VHF/UHF Field Day**	**CW/Phone**
December	5/6	ARRL EME International (50-1296 MHz	All

We are deep in the contest season and it is just a matter of picking and choosing your event and setting some personal goals.

As I write this column I have just finished participating in the SSB Scandinavian Activity Contest and also CQ WW RTTY and this coincided with a weekend where I had many family commitments.

So I just used CQ WW RTTY as a way of getting new DXCC entities and band countries in the log. I checked 20 m at 1200 for the start of SAC and was excited to see short path to Europe open in the late evening to make DXing fun again.

Just two weeks earlier during the Worked All Europe SSB event making QSOs was really hard work. So hopefully by the time you have this magazine in your hands you will be able to reminisce with a smile about all the DX that is in your logbook from Oceania SSB/CW and CQ WW SSB.

There are still some big events to dive into during November and the obvious jewel in the crown is CQ World Wide CW.

There is something for everyone this month with things like Worked All Europe RTTY, Spring VHF UHF Field Day and national contests from Japan, Ukraine, Mongolia and Czech Republic/ Slovakia.

The results of the inaugural VK Shires Contest are out and I am sure this event will take pride of place in the VK contest calendar. I am certainly looking forward to it next year.

You will have to excuse me if this month's column is a little short and if I am rather succinct.

All of my spare time has been spent in front of the radio during contests and sending out QSL cards. This is a great problem to have after the majority of us have been going through a DX dry spell for so long!

THE BIG ONE – CQ World Wide

With the RTTY and SSB versions under our belt, the excitement continues with CQ World Wide CW for 48 hours on November 28 and 29. The official website of the CQ WW is www.cqww.com/ and a copy of the rules can be obtained at www.cq-amateur-radio.com/cqwwhome.html

VHF and UHF Contests

For those who enjoy the fun of contests that occur north of HF, then please visit the VK VHF DX website run by Guy VK2KU. The link for contests is www.vhfdx.radiocorner.net/contests.html

VHF UHF Field Day

The Spring VHF UHF Field Day is on November 28-29 and the full rules were in last month's AR. The link to the contest page is www.wia.org.au/members/contests/vhfuhf/

Ukrainian DX Contest

The rules for this event are at www.ucc.zp.ua/urdxc2009rules_eng.htm

Worked All Europe RTTY

The rules for this event are at www.darc.de/referate/dx/xedcwr.htm

Japan International DX

The rules for this event are at http://jidx.org/jidxrule-e.html

OK/OM DX Contest

The rules for this event are at http://okomdx.crk.cz/g.html

LZ DX Contest

The rules for this event are at http://lzdx.bfra.org/newsen.php

Mongolian DX Contest

Date: Saturday November 21 2009

Time. 0000 2400 UTC (24 hours)

Modes: SSB and CW

Bands: 160 m 10 m (no WARC bands)

Categories:

- Single operator multi-band CW low power (100 W max)
- Single operator multi-band SSB low power (100 W max)
- Single operator multi-band CW high power
- Single operator multi-band SSB high power
- Multi operator single Tx mixed high power
- SWL all band mixed

Exchange: RS(T) and CQ zone

Every station can be contacted only once per band.

Points:

- QSOs with own country: 1 point
- QSO with different country on same continent: 2 points
- QSO with another continent: 3 points

Multipliers: DXCC entities (except for JT) and each different JT callsign counts as a multiplier as well.

Final score: total QSO points multiplied by the sum of DXCC entities and JT stations on all bands.

Logs are due on December 31 2009 and should be sent to Mongolian DX Contest, PO Box 830, Ulaanbaatar 24, Mongolia or jtdxcontest@gmail.com. Enquiries to jt1kaa@gmail.com.

29th ALARA Contest Results

29/30 August, 2009

See table below.

SUMMARY:

ALARA members: 15 (including 4 DX members)

Non-member YLs: 1

OMs: 11

Club station with 4 participants: 1

TOTAL LOGS: 28

Comments on ALARA Contest Results

Congratulations to all who participated in this year's ALARA Contest.

The VK4s lead the way with Catherine VK4VCH being the top overall winner

Name	Score	Comments
Catherine VK4VCH	2010	Top overall, Top Phone, Top VK4 ALARA member
Diane VK4KYL	1832	Top VK non-member
Pam VK4PTO	1526	
Jean VK3VIP	1384	Top VK3 ALARA member
Pat VK3OZ	630	Top VK YL CW (CW score 140)
Gerald VK2HBG	503	Top VK OM
Leonie VK2FHRK	394	Top VK2 ALARA member, Top Foundation Licensee
Sharron ZL3AE	314	Top DX YL, Top DX CW, Top ZL ALARA member
Dot VK2DB	304	
Lesley VK5HLS(now VK5LOL)	267	(Check log)
Mike VK3AVV	254	
Port Stephens ARC (VK2AOJ)	44	Top VK Club Station (Operators: Diane VK2FDNE, Melisa VK2FMAI, Susan VK2FSUE, Richard VK2FRKO)
Rosanne VK7NAW	239	Top VK7 ALARA member
Paul VK5NE	239	
Tom VK4ATH	213	
Gwen VK3DYL	211	
Graeme ZL2APV	107	Top ZL OM
Chris VK2LCD	106	
Roland VK4VDX	102	
Jenny VK5ANW/3	90	
Celia ZL1ALK	54	
Graham VK4GLC	44	
Mark VK4MON	44	
Keith VK5OQ	43	
Shirley VK5YL	40	Top VK5 YL
Mary WX4MM	28	Top USA ALARA member
Tony VK3VTH	13	
Elizabeth VE7YL	5	Top VE ALARA member

VK3

Geelong Radio and Electronics Society (GRES)

Rod Green VK3AYQ

The third quarter for the year started off with our Annual General Meeting. The main office bearers elected for the next 12 months were: President John Silver VK3LJS, Vice President Keith Vriens VK3AFI, Secretary Keith Stickland VK3XKS, and Treasurer John Collins VK3JCC.

The majority of our meeting nights for July and August were taken up with a construction project. As reported earlier we decided to build as a club project the "VHF Powermatch" that had been published in the Electronics Australia magazine in 1990.

We had made a number of projects in the past but this was the most ambitious project we have undertaken. The Powermatch is basically a volt meter with plug in modules. It is capable of measuring RF power, SWR, antenna impedance, and RF voltage from 50 to 450 MHz.

So far over 20 measuring heads have been constructed, and boards have been produced for all plug in modules. Again these modules will be constructed by the members over the next couple of months.

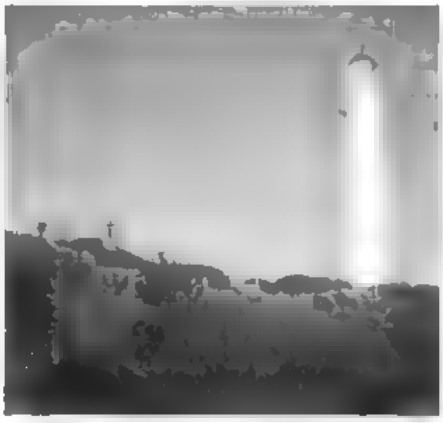
As stated this was a most ambitious project, and our thanks must go to John VK3JCC who produced all the printed circuit boards at no cost to the members.

During August we again participated in the International Lighthouse/Lightship weekend. Our usual venue was the Split Point lighthouse at Aireys Inlet. This lighthouse is situated on the cliffs at the start of the Great Ocean Road.

It is unfortunate that due to lack of camping facilities at the light house operation was confined to the Saturday only, and if we wanted to operate from that location on the Sunday we would have had to dismantle the station and set it up again on the Sunday. However operation on the Saturday was very successful and we were able to promote amateur radio to the many lighthouse visitors.

During September antennas again were featured. Jim VK3VBC gave us a detailed explanation on how he constructed his "squid pole" antenna.

Jim normally uses this antenna on the beach near his home and says that it is the best antenna he has used for working DX. He also said that he has used the antenna "Pedestrian Mobile" which I am sure you will agree would be a sight to behold.



Split Point lighthouse at Aireys Inlet . Photo K Eggleston

Bill VK3YHT also showed us how to construct a G5RV antenna, and highlighted the pitfalls of construction.

Apparently there are two different types of G5RV: those that work well, and those that do not. Bill outlined the method he employed to construct the open wire feeder for this very popular HF antenna.

Our Wednesday group of retired people has as ever been busy working in and around the rooms. Many tonnes of scrap metal have been collected, sorted and sold to help finance the club.

As a result of this we were able to buy a new dual band FM transceiver that has been installed in our operating console. Another acquisition was a new barbeque that I am certain will get a lot of use during the warmer months of the year.

Visitors to Geelong are reminded that they are always welcome to call into the club.

Meetings are held every Thursday evening at 8 pm local time at 237A High St. Belmont. If you require directions call VK3ANR on 146.525 MHz FM.

Or you might like to have a cup of coffee with the Wednesday group who meet between 9:30 and midday.

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followed by Diane VK4YL the top VK non-member and Pam VK4PTO with a mighty score of 1526 points.

Jean VK3VIP was the only one close to them with her sterling effort of 1384. Congratulations ladies!

Pat VK3OZ is our top VK CW YL again I really appreciated Pat's letter which said how much she enjoyed the contest. I would like to think that this is what the ALARA Contest is about: a lot of friendliness and opportunities for ladies to come up on the air.

Gerald VK2HBG is the Top VK OM for the fourth year in a row. Come on OMs, he needs a bit of competition!

Next year we are hoping to issue a certificate for the top OM in each VK area. We really do appreciate the OMs coming up and giving the girls lots of contacts.

The ALARA Contest is a great opportunity to try out Mike VK3AVV's computer logging program. It certainly makes my life easier as contest manager.

I would also like to see Club Stations come up in each VK area so that our Foundation licensees can have the opportunity to gain confidence on the air. Leonie VK2FHRK has taken out our Top Foundation licensee trophy for the second year in a row and I am sure she would not mind if there were serious competition.

We had a few DX contestants. Sharron ZL3AE, Celia ZL1ALK, Mary WX4MM and Elizabeth VE7YL. Thanks ladies for making the effort to participate. Hopefully more DXers will come on board with the improvement in the solar cycle.

Next year we are hoping to use the VK100WIA special callsign during the contest. There probably will be some extra points to be gained if you contact the call. We will all be celebrating the fact that the WIA is 100 years old. Quite an achievement.

33, Lesley VK5LOL, ALARA Contest Manager ar

News from

VK3

Geelong Amateur Radio Club – The GARC

Tony Collis VK3JGC

International Lighthouse and Lightship Weekend

Once again this year, the GARC had use of the former TocH dormitory buildings next to the Point Lonsdale lighthouse. This is a fantastic venue with all mod cons.

The heating and power there make the operation so much easier, leaving participants to only have to think about what radio gear to bring. Arriving at 10 am local time, it was again a cool and slightly overcast morning. Unlike last year this time there was no rain to hinder our set up.

Ken VK3DQW was there already and had his 160/80 m array in the air. On arrival the team began setting up the station and various antennas.

In all there were counterpoises for 160 m and 80 m, a G5RV and the squid pole for HF and small Yagi for 2 m.

During the weekend some ten club members turned up for sessions of between one hour and the weekend.

Inside the building there were four separate stations set up. Ken VK3DQW manning his 160 m station, Garry VK3FWGR set up a 40 m station, Ken VK3NW and Nik VK3BA set up a multi-band and D_STAR station with VK3FUNY on 20 m.

Operators switched around each station as band conditions changed but there were times when it got very confusing as there may have been three operators yelling at microphones at the same time on different bands.

ILLW Antenna Erection

During the morning session Ken VK3NW suggested as there were so many Remembrance Day contest stations all over the bands we should "have a go at it".

So we incorporated the ILLW and RD contest into one activity. We made 352 contacts and scored 282 points in the Remembrance Day Contest in the Multi Operator Phone Category. Next year Morse will be included. Ken VK3NW was the major player and recorded at least half of these contacts.

We enjoyed a wonderful evening of live entertainment with VK3NW rather exhausted, providing the floor entertainment in trying to assemble his bed.

Vanessa VK3FUNY kept the group well fed and watered as is her custom and there was too much food as is always the case.

Next morning the skies were black. A few contacts were made but both the bands and weather conditions were looking bleak.

VK3PY, VK3DJ & VK3FASW

A decision was made to pull up stumps early before the weather got really nasty. Too late, no sooner than we started the pack up process, the heavens opened up.

Our thanks go to all the members and guests who participated during the weekend.

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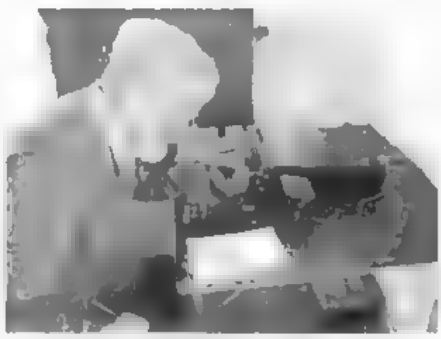

Peter VK3ZAV operating

News from VK7

Justin Giles-Clark, VK7TW
Email vk7tw@wia.org.au

Repeaters Update

We have had some wild and wet weather in VK7 over the past months and many issues with antennas, repeaters and broadcasts have resulted.

VK7RAA on Mt Barrow which covers much of the state was off air on the Sunday 27 September and thanks go to Tony VK7YBG and Anne VK7FYBG who braved the icy weather to go up Mt Barrow and fix it. Thanks also to Anne for reading the broadcast later that night for north and north west amateurs.

The 2 m repeater VK7RTV has now been commissioned at Gawler in the NW and is available on Rx 146.775/ Tx 146.175. Thanks to Graeme VK7AQ for all his work on getting this repeater up and going and for supplying the equipment. IRLP Node 6616 has also been switched to this repeater.

VK7RIN on Barren Tier in the Central Highlands was the victim of a lightning strike, but thanks to Brian VK7RR, it is now providing service again not only for broadcast relay to VK7RAA but also for comms and emergencies. Thanks to Joe VK7JG and Brian who look after and keep this repeater running.

There is now a "deep" south extension to the VK7RHT/RAD repeater in the southern VK7. VK7RBI is a simplex link on 147.300 MHz (CTCSS 114.8 Hz) into the main VK7RHT/RAD repeater system. It covers much of the Huon/D'Entrecasteaux area. This new repeater and linking has been provided by WICEN Tasmania (South) and thanks to this group for making it available.

Northern Tasmania Amateur Radio Club

Thanks to Norm VK7AC for his insights on his logging programs and propagation prediction tools at the September NTARC meeting. NTARC is now an incorporated body, following the paperwork being complete and arrival of the certificate. Now the hard work begins....HIHI! Thanks again to Bill VK7MX for all his work on developing the rules.

Cradle Coast Amateur Radio Club (CCARC)

We welcome Scott Wilson, who was successful in sitting his Foundation licence assessment in September and was applying for either VK7FTTT or VK7FRAT. Welcome to the airwaves Scott. If you are interested in becoming a radio amateur in NW VK7 then please contact CCARC learning facilitator, Keith Winkler VK7KW on email: kwinkler@internode.on.net

WICEN Tasmania (South)

WICEN holds a net each Thursday evening on VHF. Prior to the commissioning of VK7RBI there were many RF black spots making it impossible to access the net.

This group has been experimenting with an idea from the September 2009 edition of the ARRL's QST magazine where they use Skype and a radio interface to extend the range of the net to areas that have internet access but not RF access.

This has been very successful with Michael VK7FMRS being able to join the RF net through a Skype conference call.

The group is looking into the many opportunities this technology presents.

Mt Barrow at about the 1400 m level on a fine day. The repeater building is on top of this hill and you can only walk there!

North West Tasmanian Amateur TeleVision Group

The October meeting discussed the club's involvement in JOTA at camps at Burnie Scout Hall, Paton Park, Ulverstone and Camp Boomerang in Port Sorell on HF, VHF and UHF frequencies and modes including APRS, thanks to Jim VK7JH. The meeting finished up with a presentation from Tony VK7AX on all things ATV. Tony has been running ATV in the NW for many years and has a great deal of skill and knowledge in this area. Thanks Tony.

Tom VK7TL with the ground plane he is currently using to receive the ATV Group's 23cm DVB-S transmissions – he is line of sight!!!

Radio and Electronics Association of Southern Tasmania

REAST's ATV nights have been a roaring success with many amateurs and friends coming along. In the last month there has been show and tell on dishes, GDOs, ferrites, the latest magazines and interesting articles, interviews and many public domain videos including programs from the Labrats.TV series.

Our new ATV studio is currently being built and we will be moving from 23 cm DVB-S DATV to 70 cm DVB-T DATV and our new Digital ATV (DVB-T) transmitter that is on its way to us. We are even working on a chroma-key background screen. So standby for some great DVB-T - DATV in Hobart in the very near future. **ar**

News from

QTC VK4
First Published July 1921 "Of, By and For the Amateur"
News from/for Queensland Radio Amateurs

Christopher Comollattie VK4VKR
Email. vk4vkr@wia.org.au
qtc@wia.org.au

Bunya Mountains & District

The Bunya Mountains & District Amateur Radio Club is hosting a HAM AND WINE FEST 2010 on January 30th next year at Maclagan. Come along and join in the fun of a ham fest towards the west. There will be the usual new and preloved gear for sale by various groups and individuals.

Or do you have an excess of home grown fruit and vegies you would like to have on sale; or perhaps you have a non-radio related pastime you want to display. Tell us about what you would like to show off.

Also if your group would like to do a demonstration of any aspect of our hobby, you are most welcome to do so, this could be: Home brew gear, servicing gear, APRS, D-STAR, slow scan. This list is long, so we are looking for expressions of interest.

All table bookings will be $10 per table, this includes entry for one person, and others will be allowed in before 9 am to assist with the setting up. Bookings will need to be made by Friday the 15th January 2010, late bookings will be accepted, but an extra fee will apply. No buying or selling before 9 am.

There are two wineries nearby, and one of these has a B & B or you can visit the beautiful Bunya Mountains near by, there is camping and picnic grounds available as well as cabins and houses to rent, if you wanted to stay a night in comfort. What a good way to kick off the year, come along and enjoy. All the proceeds from this event will be used for a badly needed upgrade to the club's repeater installation up on Mt Kiangarow at the northern end of the Bunya Mountains. Contact Neil VK4NF at holmzie@bigpond.com or Rick VK4NRL at ricklammas@optusnet.com.au

Bundaberg

Some things get better with age and those present at the Bundaberg Club AGM could attest to that as Rusty McGrath VK4JM was elected President again.... and before turning the page thinking that is not newsworthy, perhaps the fact that he was also Club President 45years ago will change your mind.

At the young age of 79, Rusty must surely be one of the most active presidents in amateur radio today and he leads the Bundy club by fine example. From his presidency in 1964 and 1965 he spent many of the intervening years as club Secretary only taking time away to work with Scouts when his children were young.

Currently he heads up the local WICEN operations and trains a team of 12 Bundaberg Club members. As the WIA Learning Organiser, he and the assessment team have put through 29 candidates in the region since the new Foundation assessment process began.

VK4JM and his lifelong partner VK4JJ are the cunning *Mr & Mrs Fox* as the club enjoys a resurgence of fox hunting. The sport had fallen away from its height 25 years ago but thanks to Rusty and workshops on procedures, antennas and attenuators the club now holds a 2 m foxhunt every month with keen participants and a lot of fun.

VK4JM: President BARC 2009, and with VK4JJ in 1965 (inset).

It was with enormous pride that Rusty once again took the podium at the AGM to accept the nomination of President and enjoy a well deserved accolade from the members.

Anyone passing through the area would have noticed the vast improvement in the repeater footprint since the replacement of antennas on Mt Goonaneman. The installation of APRS on VK4RBG-3 has filled a gap in the east coast APRS network that has been well received.

As all clubs know, "stuff" does not just materialize high up on mountain-tops and it took many willing hands to drag heavy equipment up that mountain once again. Bundy is all about the future and through the web presence http://www.barc.asn.au/

Members are encouraged to write articles for a resource area. Articles such as VK4UD's wireless internet solutions, VK4SR's gel battery experiences and VK4JRO's TVI filter articles ensure the website has content as well as club information.

Youth have not been forgotten either as BARC gears up to run a Bundy Youth Electronics Group. Popular many years ago, the youth classes led to apprenticeships and lucrative careers so it is hoped the BYEG will see a new generation of Bundy Youth learn to solder, make circuits and hopefully get the electronics buzz What is next for the Bundy club... well the sky is the limit. Visit the website and check out the resource links. For those who twitter, BARC keeps all informed via twitter.com/vk4bw

WICEN

WICEN Queensland holds a net every Sunday on 7075 kHz from 8:30 am (2230 UTC) If conditions are poor the net moves to 3600 kHz.

Cheers VK4VKR **ar**

See Errata page 26

Keith VK6RK
vk6rk@wia.org.au

VK6

A beautiful set of numbers: 2,881,920 and 3,629,462

Northern Corridor Radio Group

John VK6NU reports

Hi all. The Northern Corridor Radio Group (NCRG) travelled to Muresk Agricultural College once again to take part in the Oceania Phone contest. (We left the NCRG club shack in the capable hands of Steve VK6IR and he did a tremendous job doing the contest from there).

Muresk is an excellent portable site with lots of space for antennas, individual bedrooms and showers, and with a large operating room and a kitchen/chat area for socialising. The college is deserted at the weekend and we virtually have the place to ourselves, which is perfect for radio contesting. This is a fun weekend for us, but we do try and put in a decent score.

All gear was transported to site on Friday afternoon. It does take quite an effort to set up antennas, towers and all other equipment. It is funny when pulling up a two element 40 metre beam to 14 metres, you never seem to have enough manpower! It was definitely time for a beer after that effort! The three element tri-bander at 13.5 metres seemed a breeze!

We were lucky enough to have a 21 metre lightweight tower to support our dipoles for 80 and 160 metres. However a note to myself for the future might be 'do not use good quality sockets as weights for the antenna launcher!' It took a while to get the line across the T section on the light tower due to the wind and after losing two sockets in the trees and long grass the effort was abandoned for the Friday evening.

On a windless Saturday morning a 12 mm socket sailed over the T section on the first go and we were able to pull up the support line fairly easily. The 'antenna launcher' is a very useful tool for field day but be wary about importing them. Just ask Phil VK4BAA. Luckily I am still not on the International Terrorist list. So with fantastic SWR on all antennas we had about eight hours before the contest to relax and take in the fine weather.

The Contest

We only used one radio and did not use a multiplier station. We used our new call sign VK6NC and only slipped back to VK6ANC once or twice when we got tired but were quickly set right by others present in the room. We started on 20 metres and got nearly 100, mostly Europeans, in the log in the first hour, then moved to 40 and had a good run.

Forty metres was the best band and with the higher points we stayed on there with quick trips to 80 and 160 to pick up the odd one. We had some good runs on 20 and 40 but not a lot on 15 and nothing heard on 10 metres. Sunday morning was quiet but 20 opened up towards the end, long path to

VK6BEC operating the NCRG station in the Oceania DX SSB contest.

The NCRG 40 metre beam on its portable 14 metre tower at the Muresk Agricultural College

Europe, with some decent numbers worked.

We scored four times as many points as last year and we are happy with our score. We were all packed up and on the road by 1630, only 30 minutes after the contest had ended. Not bad when you have 27.5 metres of tower, two beam antennas, a BBQ, and other bits to load on the trailer.

We were a little light on member numbers travelling this year but those who were there for the first time could see why we rave on so much about the place. We may only have one more year at Muresk as there are changes to the College structure and we may lose the opportunity to operate from there. Fingers crossed. A fantastic time was had by all and the Friday night and Saturday BBQ cooked by Zelkjo were worth the trip even if we had worked no DX.

Interesting to hear other stories, from your weekend!

Contest: Oceania DX Contest
Callsign: VK6NC
Mode: Phone
Category: Multi operator - Single transmitter (MS)
Total score: 2 881 920

Operators were VK6EH, VK6NU, VK61A, VK6RK, VK6YV and VK6BEC.

The NCRG club shack was taken over for the contest by Steve VK6IR, a NCRG member who provided this report, and who seems to have also set a new record for the Multi Single class.

Steve VK6IR reports

Hi all, what a weekend. I arrived at the NCRG at 7.30 pm on Friday, went into the shack, well an empty room actually, as the club station was portable and they had taken it all with them! So I set about bringing in all my equipment - radio, amplifier, computer and a host of sundry items - so the evening was spent setting it all up.

Does anyone know why computers and radios will not talk to each other on the first attempt? Then I operated until about midnight. I was going to sleep in the air conditioned bedroom at the station but I decided to go home, a 40 km drive. Thus I was up bright and early, I do not know why, the sleep would have been better!

With no radio or computer at home I was bored, so at 11 am I was off to the club to do what I do best - make lots of noise.

Soon it was time for the starting gun to go off - where had the sunspots gone, they were here yesterday but gone today!

Fifteen metres had not a sound, and I mean not a sound, no powerline noise, no plasma TVs and no internet connection so, nothing! I went to 20 metres, a few signals but not much! So anyway who needs sunspots, just get on with it! 0800 UTC arrived, JA3EY tries to destroy my 'S' meter and we were off and running!

Three litres or water, ten cans of coke and a whole chocolate mud cake later it was all over. Well not quite - the station had to be pulled apart and loaded back into the car! But first some food, thank goodness for Red Rooster! Now it was time to rest.

The boys arrived back from their adventure, with the news of their great success in the Multi-Single category 2,800,000 points. A new all time record for the category I think. Well done!

As with last year I would like to thank the NCRG for hosting my efforts again and I hope I can operate from the club again next year. OK lastly what did I score! Single Op - 3,629,462 was my claimed score.

Hills Amateur Radio Group

Work on the tower at the HARG shack has been hampered by the weather, but members were pleased that the antennas mounted on it have survived recent bad weather in Perth. A four element tri-band HF beam is mounted at 20 metres on the tower, and the club are planning to enhance their 40 metre coverage with another antenna.

In the meantime, the group have moved their members-only email list to their own domain which has been provided by Bill VK6YW, and Bill is also developing a website for the club, which will be located at www.harg.org.au

HARG members will be taking part in the CQ World Wide contest, from the club hall in Lesmurdie. Keep an ear out for them on the weekend of 24th October. They are also planning a portable station for the John Moyle Memorial Field Day next year, and hope to make some good contacts during that event.

The HARG meets twice each month - formal meetings are held on the last Saturday of each month and more informal social and project get togethers on the 2nd Saturday of each month. New members are always most welcome!

Finally I have received an email from Bernd VK6AA who tells me that, with a little luck, WA will be hosting two well known DXpeditioners in late November.

If all goes to plan they may be into giving a talk at the NCRG meeting on 24 November. We will wait and see, and if it does happen we will publicise it on the VK6 news section of AR news and invite anyone who may wish to come along.

Over to Bernd VK6AA:

I received an email from my old friend Dietmar DL3DXX who has asked if he and Tom DL5LYM could join us in CQWW CW in November, and double the number of operators in our Multi/Single team to 4.

Both Dietmar and Tom have been members of a number of DXpeditions in the past and are great CW operators. I not sure when they would be arriving but if in Perth on Tuesday, 24 November, I am sure they could put together a bit of a presentation at the club about their recent DX ventures - VK9DWX, VK9DNX, BQ9P, VP6DIA etc).

Also, Dietmar is a top 160 metre man with a wealth of experience on low band antennas which could be of great value for the club's low band set-up.

I apologise if this month's column has been a bit NCRG orientated but if other groups do not provide the news I cannot pass it on! 73 and good DX to you all, and dig out some news for the next one!

Keith VK6RK vk6rk@wia.org.au

David Giles VK5DG

Sunspots! We don't need no stinking sunspots!

This month's report is on more launches during September. But first something to ponder about a subject dear to most of us.

Solar inactivity is good

Hardly a week goes by before I hear or read someone complaining about the current lack of solar activity. When it comes to satellites, the sun is a two edged sword. Satellites need light from the sun to provide power and stop them from freezing in space. But the sun also sends dangerous particles and other radiation detrimental to the satellite's health and causes communications difficulties.

The high speed protons ejected by the sun degrade silicon based solar cells. This was discovered very early in the space age. Solar panel power outputs can typically reduce by 14% over the first seven years. Geostationary satellites are launched with 25% extra solar cells to allow full power output at the end of their estimated lifespan. With higher solar activity comes more high speed protons and other damaging radiation [1].

Signals from HF operators propagate around the Earth by bouncing off the 50 to 600 km high atmospheric layer known as the ionosphere. It is mainly composed of particles of atomic oxygen and nitrogen at very low density. These atomic particles are from gas molecules which have been ionised by the ultra violet and X-ray radiation from the sun. As we are experiencing now, solar activity is low and the amount of ionisation is also low. Hence the ionosphere is currently not highly ionised and reflects radio waves poorly. At peak times of solar activity the ionosphere is intensely ionised allowing radio signals of higher frequencies to be reflected. This causes several problems for satellite operations. The first problem is that your signals will not reach the satellites. Uplink signals in the 2 m and even the 70 cm bands will bounce off the ionosphere back to Earth, especially when you are pointing your antennas at the horizon. The second problem is that transmissions from the satellites will bounce off the ionosphere and go back into space.

As solar activity increases, the amount of energy absorbed by the ionosphere increases which heats it up. As gasses heat up they expand so the ionosphere also expands into space. Now we have more gas particles colliding with low orbit satellites. This is known as drag and is a noticeable problem for satellites at heights of 500 km or less. OSCAR-56 (Cute1.7+APD) was launched into an orbit with a perigee of only 290 km in

AMSAT-VK

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About AMSAT-VK

AMSAT-VK is a group of Australian amateur radio operators who share a common interest in building, launching and communicating with each other through non-commercial Amateur Radio satellites. Many of our members also have an interest in other space based communications, including listening to and communicating with the International Space Station, Earth-Moon-Earth (EME), monitoring weather (WX) satellites and other spacecraft. AMSAT-VK is the primary point of contact for those interested in becoming involved in amateur radio satellite operations. If you are interested in learning more about satellite operations or just wish to become a member of AMSAT-Australia, please see our website.

AMSAT-VK monthly nets

Australian National Satellite net
The net takes place on the 2nd Tuesday of each month at 8.30 pm eastern time, that is 9.30 Z or 10.30 Z depending on daylight saving. The AMSAT-VK net has been running for many years with the aim of allowing amateur radio operators who are operating or have an interest in working in the satellite mode, to make contact with others in order to share their experiences and to catch up on pertinent news. The format also facilitates other aspects like making 'skeds' and for a general 'off-bird' chat. In addition to the EchoLink conference, the net will also be available via RF on the following repeaters and links.

In New South Wales
VK2RMF
Maddens Plains repeater on 146.850 MHz
VK2RIS
Saddleback repeater on 146.975 MHz
VK2RBT
Mt Boyne repeater on 146.675 MHz

In Victoria
VK3RTL Laverton, Melbourne,
438.600 MHz FM, - 5 MHz offset

In South Australia
VK5TRM, Loxton on 147.125 MHz
VK5RSC, Mt Terrible on 439.825 MHz
IRLP node 6278, Echolink node 399996

In Tasmania
VK7AX, Ulverstone on 147.425 MHz

In the Northern Territory
VK8MA Katherine 146.700 MHz FM

Operators may join the net via the above repeaters or by connecting to EchoLink on either the AMSAT-NA or VK3JED conferences. The net is also available via IRLP reflector number 9509. We are keen to have the net carried by other EchoLink or IRLP enabled repeaters and links in order to improve coverage. If you are interested in carrying our net on your system, please contact Paul via email.

Become involved

Amateur satellite operating is one of the most interesting and rewarding modes in our hobby. The birds are relatively easy to access and require very little hardware investment to get started. You can gain access to the FM 'repeaters in the sky' with just a dual band handheld operating on 2 m and 70 cm.

These easy-to-use and popular FM satellites will give hams national communications and handheld access into New Zealand at various times through the day and night.

Should you wish to join AMSAT-VK, details are available on the web site or sign-up at our group site as above. Membership is free and you will be made very welcome.

February 2006 and expected to last only one year. It is predicted to burn up during the last quarter of 2009, almost two years later [2]. One study into the orbit of the ISS calculated that at solar minima, the ISS will lose 80 m of altitude per day (or 28 km per year). At solar maxima this increased to 400 m per day (or 147 km per year). The ISS uses rockets to boost its orbit several times per year [1].

One satellite that was able to show some very interesting propagation during times of high solar activity was RS-12/13. RS-12/13 consisted of two satellites (RS-12 and RS-13) attached to and powered by a Russian Navigation satellite COSMOS-2123. They had receivers in the 15 m band and 10 m transmitters. An example contact could be between Scotland and Australia using signals bounced off the ionosphere to the satellite and back the same way. In some cases the satellite did not even have to be in the direct path.

Signals from all over the world were received via RS-12/13. Not bad for a satellite only 1000 km high. Unfortunately for RS-12/13 this was not its only notable solar effect. Around July 2002 it is thought that the satellites were hit by a massive proton flash from the Sun. Attempts to gain control failed and they have remained silent since [3, 4].

In summary, recent years have given excellent solar conditions for satellites. They have degraded less, stayed up longer and given reliable communications. Conditions will change during the next few years as sunspot numbers rise.

References:

[1] http://www.solarstorms.org/Svulnerability html

[2] CO-56 page: http://lss.mes.titech.ac.jp/ssp/cute1.7/cute1.7-1/projectoverview_e.html

[3] http.//www.amsat.org/amsat/sats/n7hpr/rs1213.html

[4] http://www.amsat org/amsat/archive/amsat-bb/200202/msg00707.html

Six new satellites

During September there were two launches from Russia and India carrying six satellites with transmitters using the amateur bands.

On 17th September a Russian Soyuz-2 launched from Baikonur Cosmodrome in Kazakhstan with seven satellites. The main payload was the Meteor-M weather satellite. Satellites carrying transmitters on amateur bands were SumbandilaSat from South Africa and Tatiana-2 from the Moscow State University.

SumbandilaSat

SumbandilaSat is sponsored by the South African Department of Science and Technology. Its main mission payload is a multi-spectral imager designed to have a resolution of 6.25 m. Images received will be used for monitoring agriculture and land use, water levels in dams and tracking population movement. The experimental amateur radio payload consists of an FM transponder and voice beacon.

SumbandilaSat has a polar orbit with an altitude of 500 km to suit the spectral imager. The mission has a designed lifespan of three years. With such a low orbit, it may not last more than five years Much of this will depend on solar activity (see above). The satellite is 3-axis stabilised to give precise pointing for the imager.

The amateur payload will be turned on after commissioning. It consists of a V/U FM voice transponder, a parrot mode repeater and a digitalker voice beacon. The modes are controlled using CTCSS tones (details of which have not been published at this time). The uplink frequency is 145.880 MHz, the downlink is 435.350 MHz. The operation will be as follows:

If a certain control tone is received, the satellite will turn on the transponder. A different control tone will turn on parrot mode. It will record 20 seconds of audio received on the 2 m uplink and replay this message on the 70 cm downlink. If no tones are received for a period of time then it will automatically revert to the voice beacon. The beacon will contain a 15 second message that is programmed from the ground station. A copy of the message can be heard from the AMSAT-SA website [5].

SumbandilaSat was originally planned to be launched from a Russian submarine around January 2007. This and other launch opportunities did not happen and there was some concern that it would not fly at all. Fortunately they were able to get it on-board a Russian Soyuz flight. This launch was also delayed by two days due to bad weather and a technical problem.

The other experimental payloads consist of a vibrating string experiment, a Very Low Frequency (VLF) receiver, an architectural radiation experiment for commercial off the shelf devices and a software defined radio (which is shared by the amateur radio payload). The vibrating string experiment will examine the characteristics of a vibrating string in microgravity. The results will be compared with overhead electricity and telecommunications cables. The VLF receiver will look at propagation of VLF signals through the ionosphere.

[5] http://www.amsatsa org.za/SumbandilaSat.htm

Tatiana-2

The second satellite from the launch is Tatiana-2 from the Moscow State University. Its mission is to look at light phenomena in the Earth's atmosphere due to cosmic rays and high energy particles. It will also investigate the Earth's gravitational and magnetic fields. The science telemetry will be transmitted around 1700 MHz. There is a CW beacon on 435.265 MHz using a similar format to other RS-series satellites. Strangely, this one signs itself as RS-28 but it is otherwise known as RS-38.

On 24th September, the Indian Space Research Organisation launched the 960 kg remote sensing satellite OceanSat-2 and four Cubesats into a 720 km polar orbit. These Cubesats all contain transmitters in the 70 cm band.

Swisscube

This Cubesat is the first satellite from Switzerland. Designed and built at the Ecole Polytechnique Federale de Lausanne, its mission is to use a 50 mm long telescope to image airglow in Earth's upper atmosphere. The light is measured at a wavelength of 767 nm +/- 10 nm (infra-red) and is caused by molecules of oxygen re-combining at night at an altitude of 100 km. These molecules were split by sunlight during the day. It is expected to download one image per week.

Transmissions from Swisscube are on 437.505 MHz. A 120 mW, 14 word per minute CW beacon transmits worldwide. 1200 baud FSK science and engineering data is turned on when in range of control stations in Switzerland. I have heard the CW signal and it sounds distorted

The website for Swisscube is very informative and well presented. It has an amateur radio operator area so that you can download a CW telemetry decoding program.

The Swisscube website is at http://swisscube.epfl ch/

BEESat

BEESat was constructed at the Berlin Institute of Technology. Its mission is to use coin sized micro reaction wheels to accurately orientate its position in space. Using a camera, magnetometers and sunsensors to provide feedback for the reaction wheels makes BEESat a complex system in a small cube. There is a CW beacon and high speed telemetry on 436.000 MHz. Despite a few attempts, I have been unable to hear either transmission.

More details can be found at http://server02.fb12.tu-berlin.de/rft/beesat/BeeSat/About_BeeSat.html

UWE-2

UWE-2 is a Cubesat developed by the University of Wurzburg in Germany. Like BEESat it will demonstrate methods of position control. It has a 1200 baud AFSK downlink on 437.385 MHz (same frequency and mode as SEEDS II/ CO-66). It does not have a CW beacon. The university is interested in any telemetry received from amateur operators. Also like BEESat, I have not heard any packets from this Cubesat yet. More details can be found at http://www7.informatik.uni-wuerzburg.de/forschung/space exploration/projekte/cubesat/uwe-2/get_involved/

ITUpSAT-1

In contrast to Swisscube, not much has been published about the Turkish Cubesat ITUpSAT-1. Constructed by students at the Istanbul Technical University, ITUpSAT-1 has a low resolution camera and other sensors. It has a CW beacon transmitting on 437.325 MHz. I have heard this CW signal and it has a poor tone quality, but is readable.

The website is at http://usl.itu.edu.tr/index.html

Updates

POLLOX, one of the satellites launched from the Space Shuttle during July, has gone silent. Its batteries went flat around 12th September. This will not affect its primary mission as a moving reflector for laser beams (to determine its height and from that atmospheric density)

Detailed drawings of ARISSat-1 (previously known as SuitSat-2) have been published. In nine weeks the team has constructed a box structure from scratch. The main structure (not including antennas) is now a box shape with the dimensions of approximately 50x50x27 cm. One bonus of the new structure is that the solar panels will be mounted on each of the six sides to give a better distribution than was possible with the spacesuit. These drawings can be seen at http://71.43.22.149/

Final Pass

With SumbandilaSat's 500 km altitude, it will not be up for very long. Hopefully by the time you read this article it will have been commissioned and we will have a third FM transponder in operation. Enjoy it before those sunspots come.

ar

Silent Key — David Couch VK6WT (RSARS 1793)

All RSARS and WIA members will be saddened to hear of the passing of David Couch VK6WT on 7 October 2009, at the age of 92 years, and after a short illness.

Born in Fairfield, Victoria in 1917, David was licensed as VK6WT in February 1946, after obtaining his certificate of proficiency in 1944 whilst serving in the Australian Army during the late years of World War 2. During his army service, David was involved with the installation and operation of early microwave army No.10 set radio links. David was an accomplished marksman with a .303 SMLE rifle and was proud to show his achievement certificate to visiting friends. In addition, he had one of those prized certificates given to those who had served their country in times of need.

He was originally a member of the Victorian division of the WIA, but became WIA Western Australian Division member number 6 in May 1949. Subsequently, David was appointed as a Life Member of WIA in July 1988 for his services to amateur radio in Western Australia. Strangely enough, his callsign was originally held by the Wireless Institute of Australia Perth Aero Section in the early 1930s.

On his return from Army service David moved to Western Australia from Victoria and spent some time employed in a well known radio store, and generally in the radio/electrical industries, before joining the WA Department of Technical and Further Education, as a Lecturer (Electrical Engineering). He was for many years responsible for the Amateur Radio Certificate of Proficiency classes at the Mount Lawley Technical College, and excelled in passing on the basic facts about radio communication to those seeking Amateur Radio licences. David collected hundreds of Morse keys from all over the world and proudly displayed them to all who visited him in his back garden shack. He was an expert CW operator and could always winkle out rare countries, adding to his DXCC, RSARS and FOC lists much to the envy of his mates in Western Australia.

As VK6WT he was always reluctant to confess to his rare excursions on telephony, much preferring CW operation on the DX bands. Many current WA licensees are grateful to David for providing their early introduction to amateur radio, and he will be greatly missed by his many friends. He is survived by his granddaughter and grandson.

Submitted by Ron Vaughan VK6RV and Alan Gibbs VK6PG.

ar

Silent Key

Col Ferguson VK5CJ (RAOTC 305) Mount Gambier

Died 9 June 2009, aged 92.

I first met Col in June 1941 at RAAF Base Pearce, WA. We were in the same Squadron (No. 14). We became friends and visited Perth while on leave. We visited friends of Col (the Bowley family) where I met my wife Val of 65 years.

Col and I were posted to Darwin in December 1941 and went through the first raids. I did not see him again until 1945, when I was on the way to Borneo in 24 Squadron. After discharge, we got back on air and contacted each other on 40 metres (7103 kHz).

Col married Janet in 1946. They had two children – Bruce, now in Canberra, and Colleen Black of Mount Gambier. Janet died in 1978.

On discharge from the Air Force, Col joined Radio 5SE as Engineer, later to become Chief Engineer and Manager.

He had a severe stroke in 2007 and lost his speech.

He was always a happy chap and enjoyed life.

Vale Col.

73, Ray Deane VK5RK ar

VHF/UHF – An Expanding World

David Smith VK3HZ
vk3hz@wia.org.au

Weak Signal

David Smith VK3HZ

The first trans-Tasman VHF tropo contact for the season occurred rather unexpectedly for those concerned. On the morning of September 19th, Rex VK7MO in Hobart was operating on the 2 m FSK441 meteor scatter session, beaming towards New Zealand.

Bob ZL3TY in Greymouth, 1950 km away, was hearing Rex's signal continuously rather than in occasional bursts from the meteors. They switched to SSB and exchanged 5x3 reports each way. They then had a JT65A digital contact with signals peaking at a very strong –4 dB. Unfortunately, 70 cm was not operational at Bob's end, so higher bands were not attempted.

VHF/UHF/Microwave DXpedition

Norfolk Island (OC-005) (RG30xx)

3 – 14 January 2010

VK9NA 2010

NORFOLK ISLAND
SOUTH PACIFIC

A team of experienced VK amateurs is heading to Norfolk Island in January to operate bands from 6 metres to 10 GHz. The team from the VK Microwave Group will be Alan VK3XPD, Kevin VK4UH and Michael VK3KH. Preparation and planning is progressing well with accommodation and airfares already booked. As with most remote operations, the airfare cost and arrangement are the most difficult part, particularly as the group plans to take a 1.2 metre dish for all bands from 1296 MHz through to 10 GHz.

A group of VK5 and VK3 operators has organised to travel to Port Macquarie on the NSW coast, with full microwave gear, to take advantage of the opportunity. A number of ZL operators have also indicated their interest in setting up at favourable locations on the NZ North Island.

It is hoped to use 2 metres as the main propagation indicator, and then move up the bands as propagation/conditions permit. The group will have Internet access, and will use the VK Logger (www.vklogger.com) as the main method of liaison. Operation will be SSB, CW and where possible Digital modes for meteor scatter and tropo paths.

Six metres will be part of the operation, and they are hoping for opportunities on the "magic band" in all directions. As this is the main Sporadic E season, anything is possible. They will have HF capabilities, but these will be limited as VHF, UHF and microwaves are the prime focus.

The group is excited about this venture, and hope to receive support from VK and ZL operators to make it worthwhile. Updates will be posted closer to the time. For further information, contact Michael VK3KH at mdc@cranbournemusic.com.au

10 GHz New Digital Record

I am always a bit reluctant to write about things I have been doing, but hopefully this is of general interest too.

Rex VK7MO and I have been attempting to work over increasing distances on 10 GHz. To dig down into the noise, we are using equipment with very high frequency stability allowing the use of the JT65 weak signal digital mode. As a predictor of the signals over a given path, I have been using the excellent RadioMobile software package written by Roger VE2DBE. While this software is intended to analyse VHF/UHF paths, the predictions for 10 GHz have matched our actual results fairly closely.

Our latest attempt was on September 10th from Mt Buninyong near Ballarat to Mt Barrow in northern Tasmania. For that path, RadioMobile predicted a margin of about 6 dB for a digital contact using JT65A. That meant a signal of about –19 in WSJT terms.

I arrived at Mt Buninyong at 11:30 am to meet Ian VK3AXH who was doing some work on the VK3RMB beacon installation (back on air on 70 cm and 23 cm very soon).

The lookout tower has several levels with public access, then above that the fire lookout level and at the top is an equipment room (almost empty) with Perspex windows and a clear view to Melbourne and beyond. This was where we set up, so the gear had to be carted up the steps, up through two hatchways to the top - with Ian doing a good imitation of a packhorse.

Just as we hoisted the last bit of equipment up, the mobile rang with Rex VK7MO reporting he was all set on Mt Barrow. Joe VK7JG was assisting him. Soon after, Ian VK3YCQ joined us, struggling up the hill in his slightly sick 3-cylinder Anglia.

We were set up and all running by about 12:40 and immediately Rex's JT65 "bagpipes" were audible - just. By 12:45 we had exchanged reports and set a new 10 GHz Digital record of 510.5 km. The reports were -14 and -17 that, in JT terms, is probably about S2 and was slightly better than RadioMobile had predicted.

We then continued to transmit to each other to see what the path would do. At about 13:00, signals had risen significantly to -6, which is getting towards voice contact level. Rex switched to SSB and we struggled through an SSB contact (4x1 / 3x1) with lots of rapid QSB.

However, signals were still on the rise, and Joe and I then exchanged 5x1 reports easily. We continued to chat with signals at one stage getting to 5x7 / 5x9! We seemed to be getting very strong QSB over a several-minute cycle, together with the rapid 2-second QSB noted earlier.

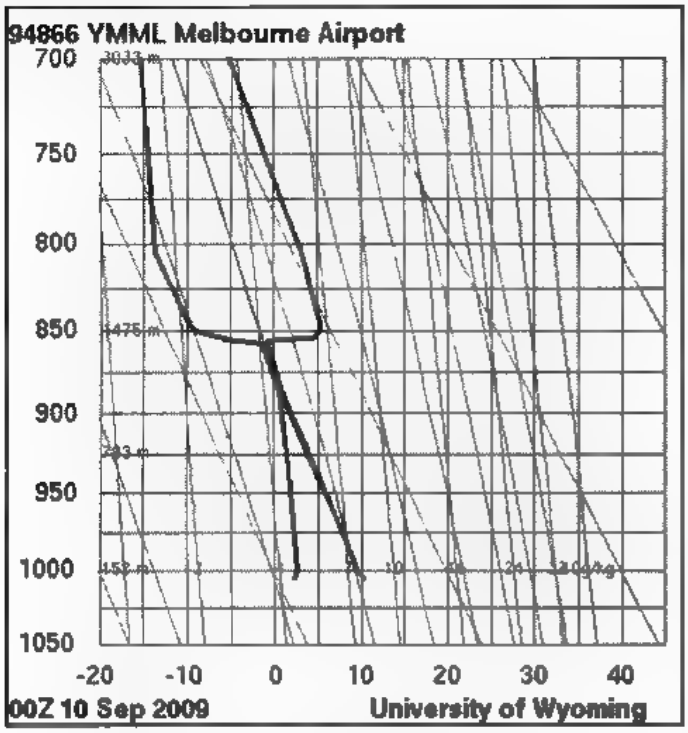
I switched to transmitting a carrier, and Rex observed the results on Spectrum Lab. Unfortunately, my GPSDO internal batteries had come adrift, so when I had unplugged it from the car, it died completely. So, it was still settling down again (after being powered up again when we reached the top of the tower) causing a 30-sec cyclic 3 Hz wobble in my carrier. Switching to "hold" fixed that, although slightly off frequency.

I then worked Alan VK3XPD (5x9 / 5x7) in Melbourne, although the dish was pointing through the wooden window frame. Unfortunately Alan did not succeed with Rex, possibly due to obstruction of his dish in that direction.

Signals to Rex continued to vary up and down with some quite strong periods until we packed up just after 15:00.

Later, Joe VK7JG back in Launceston observed that the Geelong 2 m beacon

was 5x7 so it appears that we had some good conditions come across as we were operating. This seems to be confirmed by the radiosonde temperature trace from 0000 Z at Melbourne Airport. This shows around 5 degree inversion at 1450 metres which is just high enough given that Rex was at 1286 metres on Mt Barrow



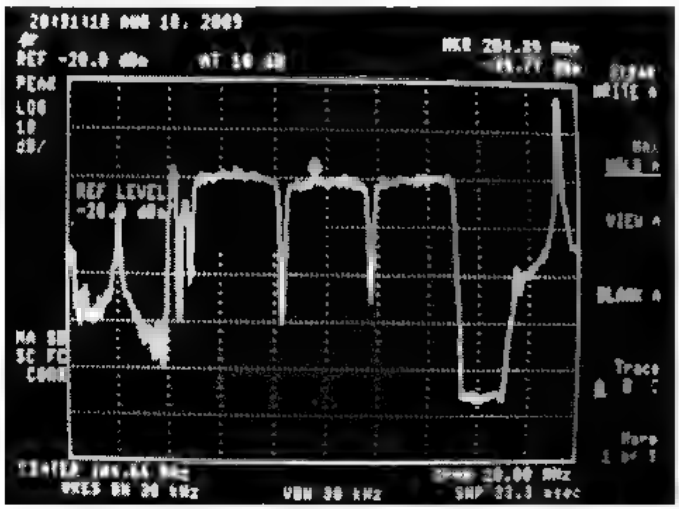
Radiosonde readings at Melbourne Airport

Thanks to Ian VK3AXH for providing access to the tower and for carting the gear and to Ian VK3YCQ for his assistance.

And thanks to Rex VK7MO and Joe VK7JG for being at the other end!

New Interference Possibility

No doubt you have all heard of the new DAB+ digital radio system recently introduced in major capital cities. Apart from the strong possibility of it becoming a white elephant, it also introduces a new interference potential for certain VHF transverter configurations.



Spectrum analyser screen showing the strong DAB carriers causing problems for VK4KZR

Rod VK4KZR runs a fairly standard transverter setup on 2 m, converting from 144 MHz down to 28 MHz where an HF rig performs the IF duties. Recently, he noticed a sudden and drastic increase in noise level on the 2 m band making operation almost impossible. With some sleuthing, he traced the cause to the new DAB+ transmitters that are putting a whopping signal into his QTH. With a Spectrum Analyser connected to the antenna, he recorded the following:

The three broadband signals are the 3 DAB+ carrier channels shared by the many radio stations. They are about –40 dBm, a big signal.

Rod eventually figured out what was happening. The second harmonic of his 116 MHz LO at 232 MHz was mixing with the DAB+ signal at around 204 MHz to produce the 28 MHz interference. His solution was to make up a filter to block out the DAB+ signal.

Please send any Weak Signal reports to David VK3HZ at vk3hz@wia.org.au.

The Magic Band – 6 m DX

Brian Cleland VK5BC

Band conditions continued to be quiet during September with only a couple of minor 'E' openings. Main activity has been the morning scatter contacts and Brad VK2QO reports the following:

There are a lot of operators working scatter now and more and more showing an interest on the weekends with ZL and VK6 watching the logger as well. At the moment interest is high on the east coast being more VK4s and VK7s then 1s, 2s and 3s. On the weekends there can be up to 15 operators on in the mornings taking part or just watching and listening. Also many are now taking an interest in the digital modes in the evening on 50.230.

Here are a few September reports:

From Scott VK4CZ:

4th at 2023 Z Brad VK2QO 519, 5th at 2149 Z Gerry VK2APG 5/5, 18th at 1930 Z Darrell VK2BLS 519, at 1954 Z Brad VK2QO 519.

From Phil VK4FIL:

10th Gerry VK2APG with FSK441, 14th Darrell VK2BLS (JT6M), 15th Gerry VK2APG (JT6M), 22nd David VK3AUU 5/4 SSB.

From Glenn VK7AB: 9th Peter VK5PJ 5/3.

From Brian VK4EK: too many to report - worked Dave VK1DJA, Gerry VK2APG, Darrell VK2BLS, Brad VK2QO, Trevor VK3VG, Ron VK4CRO and Phil VK4FIL with signals ranging between 5/1 to 5/6 in SSB, CW and digital.

From Brian VK5BC: 3rd Kevin VK3WN and Joe VK7JG both SSB, 4th Joe VK7JG SSB.

October is looking better with John VK7XX and Joe VK7JG joining in the fun weekdays.

Early morning on the 1st September, Brian VK4EK in Sapphire completed several 'E' contacts with VK1, 2 and 3 duringp a 30 minute opening and on the 9th Brian reported the Barossa beacon VK5RBV and worked Brian VK5BC 5/9. On the 20th David VK4ZDP Innisfail worked MikeVK2ZQ, Brad VK2QO and Darrel VK2BLS with signals up to 5/9 and the VK2's reported hearing the Atherton VK4RHT beacon on 50.281 MHz.

Please send any 6 m information to Brian VK5BC at briancleland@bigpond.com .

ar

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The Ozi-Data Interface, a radio data interface kit for PSK31, SSTV, and others, $50.00 plus $5.50 postage to VK.

Contact the Mid North Coast Amateur Radio Group Inc, Box 505, Bellingen, NSW, 2454, or http://www/mncarg.org/ or mncarg@yahoo.com.au

WANTED - NSW

Mini-Scamp microcomputer hardware as described in Electronics Australia' in about 1977 Several units required for an educational project. Prefer complete units in reasonable condition but incomplete units and parts would also be useful.

Contact Bruce Carroll VK2DEQ at Unit 9, 55 Merimbula Drive, Merimbula. NSW. 2548, or email bpcarroll@hotmail.com or phone 0428 638 023.

FOR SALE – VIC

Toshiba 2520CD satellite laptop computer, with powerpack and batteries. Installed programs include Word, Publisher, Dreamweaver 4, Notebook, myobaccount, MSproject, Windows Media. Fast internet Ethernet card. Excellent performer, Immaculate condition. $100.

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10 metre helical 5/8 mobile whip antenna. $20.

2 metre mobile 5/8 antenna, SO-239 connect. $20.

Stan VK3BNJ 03 9743 6706.

FOR SALE - QLD

Hammarlund Super Pro Receiver Bands 540 -1160 kHz, 1160 – 2500 kHz, 2.5 - 5.0 MHz, 5.0 -10.0 MHz, 10.0 - 20.0 MHz.

Condition unknown, as I have never turned it on. The audio section has been modified. I do not have its original PSU, however I will include a PSU which should be able to power it. Included also is an original manual, although not the same model. The manual is for the Super Pro but covers different bands including the AM broadcast band.

Condition is what you might expect for a 1940's military radio receiver. Prefer pickup from Brisbane. $50.00.

Malcolm VK4ZMM QTHR. Email any questions to vk4zmm@bigpond.net.au or 07 3298 5454

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Bruce VK5ZJE Phone 08 8382 1563.

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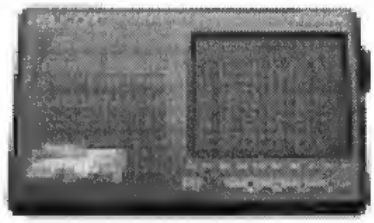

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has been started and can be found at

http://www.amateur-radio-wiki.net

We are looking for writers of articles suitable for this website.

The intention is that it will become an online encyclopaedia for hams.

Please log into the site, register and start writing!

Tim Roberts VK4YEH QTHR.

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Chairman of the regional committee is in bold

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Broadcast details

VK1	VK1WIA:	Sunday 0900 local on the Mt Ginini repeaters 146.950 and 438.050 MHz. The UHF repeater requires 123 Hz access tone and is linked to the Goulburn repeater.
VK2	VK2WI:	Sunday 1000 and 1930 local, on 1.845, 3.595, 7.146, 10.125, 14.170, 28.320, 52.525, 145.6000, 147,000, 438.525 and 1273.500 MHz. Also 5.425 MHz USB in the morning.. Plus provincial relays both sessions and country relays in the morning via local repeaters. VK1WIA news is included in the morning.
VK3	VK1WIA:	Sunday 10:30 am and 8 pm Local Time. Amateur Radio Victoria VK3BWI B/cast Network: 3.615, 7.158, 10.133,147.250 VK3RMM Mt Macedon, 146.700 VK3RML Mt Dandenong, 147.225 VK3RWG Mt Baw Baw, 439.800 VK3RMU Mt St Leonard.
VK4	VK1WIA:	Sunday 0900 local via HF and major VHF/UHF repeaters.
VK5	VK5WI:	Sunday 0900 local, on 1.843, 3.550, 7.140, 28.470, 53.100 AM, 146.900 (SE), 146.925 (CN), 147.000 and 439.975
VK6	VK6WIA:	Sunday 0900 local, on 1.840, 3.582, 7.140, 10,125, 14.116, VK6RHF Perth 29.680, VK6RAP Perth 53.800, VK6RAP Perth 146.700, VK6RMW Mt William 146.900, VK6RBN Busselton 147.350, VK6RUF Roleystone 438.525, and on UHF CB Ch 1 Perth North. Sunday 1900 local, on 3.565, VK6RHF Perth 29.680, VK6RAP Perth 53.800, VK6RAP Perth 146.700, VK6RMW Mandurah 146.900, VK6RMS Mt Saddleback 147.250, VK6RBN Busselton 147.350, VK6RUF Perth 438.525, and on UHF CB Ch 1 Perth North Also in 'Realaudio' format from the VK6WIA website.
VK7	VK7WI:	Sunday 0900 local, on 1.840 AM, 3.570, 7.090, 14.130, Hobart CB 27.225 LSB, 28.525, 53.825 FM, EchoLink Node 100478 (VK7AX-L) 145.350, VK7RMD NW 146.625, VK7RAD and VK7RHT South 146.700, VK7RNW NW 146.750, VK7RAA North 147.000, Ulverstone 147.425, Ulverstone 444.250/449.750 and Hobart UHF CB Channel 15. Tuesday 2100 local VK7RMD NW 146.625.
VK8		Sunday 0900 local, on 3.555, 7.050, 10.130, 14.337, 145.900 (DARC VK8DA). Sunday 0900 and 2000 local 145.900 IRLP 6800 Katherine (Mike VK8MA). Sunday 1000 local 439.150 Katherine (Steve VK8SJ)

Note that many clubs broadcast the WIA News via local VHF and UHF repeaters. Check the News section of the WIA website.

Photographs from VK3PC's JARL adventure photo album

Hiromu Okada JA3CKF wind powered station.

Editor's Note: To see a video of this 'green' powered mobile search Google Video for ja3ckf-at-the-tokyo-ham-fair

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